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FINAL REPORT DIGITAL DATA PROCESSING SYSTEM DYNAMIC LOADING ANALYSIS

30 APRIL 1976

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ABSTRACT

This Final Report provides the results of a 10-month study by System Development Corporation (SDC) that involved the simulation and analysis of the Space Shuttle Orbiter Digital Data Processing System (DDPS). This Dynamic Loading Analysis was performed for the NASA Johnson Space Center under contract NAS9-14630. The Mated Flight and Postseparation Flight phases of the Space Shuttle's Approach and Landing Test (ALT) configuration were modeled utilizing the Information Management System Interpretative Model (IMSIM) in a computerized simulation modeling of the ALT hardware, software, and workload.

System Requirements simulated for the ALT configuration were defined. Sensitivity analyses determined areas of potential data flow problems in DDPS operation. Based on the defined system requirements and the sensitivity analyses, a test design is described for adapting, parameterizing, and executing the IMSIM. Varying load and stress conditions for the model execution are given. The analyses of the computer simulation runs were documented as results, conclusions, and recommendations for DDPS improvements.

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SUMMARY

This report summarizes the results of a simulation analysis of the Space Shuttle Orbiter Digital Data Processing System. This study was performed for the Avionics Integration Branch of the Avionics Systems Engineering Directorate for NASA's Johnson Space Center. The study was conducted by members of the Systems Analysis Center of the Satellite Control Program of System Development Corporation under contract NAS9-14630, and was performed during the period of 24 June 1975 through 30 April 1976.

NASA Technical Monitor has been Mr. Carroll T. Dawson of the JSC Avionics Integration Branch. Under Mr. Dawson's direction, SDC has performed an extensive simulation modeling analysis utilizing IMSIM of the Approach and Landing Test (ALT) configuration, with total emphasis on the related impact on the orbiter's Digital Data Processing System (DDPS). SDC personnel involved in this study and primary responsibilities were:

Richard W. Bilek - Head, Systems Analysis Center: overall project supervision and quality assurance

Jacobus J. Lagas - Project Manager: requirements definition, test design, execution, and analysis.

James J. Peterka - model adaptation, execution, and analysis

Alfred E. Tucker - requirements definition, sensitivity analysis, and model parameterization.

1.1 OBJECTIVES

As the end product of this contract, this report constitutes a detailed analysis of the DDPS, and identifies constituents of the system which are potentially subject to overload under stress and which may significantly degrade performance of the system in critical situations. The analysis is based on a quantitative representation of the DDPS as a discrete simulation model and on the results derived from the operation of this model. This report also includes a qualitative study of the system organization and structure to determine the adaptability of the system to varying loads and requirements. This information was used to parameterize the model and was instrumental in completing the analyses.

1.2 DATA SOURCES

Sources for the study included current documentation of the DDPS/ALT functional requirements and detailed design specifications as listed in Appendix F. Upon NASA direction, the study was primarily confined to the hardware and software which may be employed during the airborne and flight phases of the ALT. These efforts were applied to investigation of characteristics and activities which are discernible to a time resolution of one millisecond; i.e., items

other more qualitative aspects.

such as control signals, IOP memory access for commands, parity checking, and CPU instruction execution were considered only insofar as collective effects are concerned. The effort was focused on quantitative data processing aspects of the DDPS, i.e., data flow, throughput, response, etc., rather than upon

planned information content or quality, reliability, human engineering, or

Level A Hardware specifications and the Functional Subsystem Software Requirements (FSSR) System Interface document were used to determine the DDPS ALT configuration and the nature of the components to be connected to the GPCs via data buses for communication and control. These sources also provided information on the processing rates of the CPUs, capacities for data retention by terminal elements such as displays, transmission rates for components and data buses, and sizing of message transmissions. Documents pertaining to the Central Processing Units (CPUs) and Input-Output Processors (IOPs) functional descriptions and principles of operation were consulted to gain an understanding of the functioning of these modules.

Level A Software specifications, requirements for ALT Guidance, Navigation, and Control (GN&C) and System Management (SM) plus functional design specifications for ALT GN&C, SM, and Systems Software were used to determine the structure of the DDPS software. Significant program modules to be executed in these simulations were also determined from these documents. For each of these program modules, characteristics were determined with regard to the conditions for executing the module, the impact of the current system status on the execution time of the module, the effect that execution of the module has on the system status, and the data transmissions performed by the module. This information was used to compile a set of system states for the DDPS which were principal factors in determining system loading.

1.3 MODEL DEVELOPMENT

The information which was derived from study of the source documents as described in section 1.2 was used to adapt and parameterize a discrete event simulation model of the DDPS. The basic model is a computer program simulator for information management simulation, denoted as "IMSIM" (Information Management System Interpretive Model). This program was originally developed by SDC under contract to NASA to provide methods and capabilities for performing dynamic loading studies of computer-based data processing systems, and has been well suited to the simulation of the Shuttle Orbiter DDPS. IMSIM is described in detail in the IMSIM User's Manual (Reference 2), and summarized in Section 5.1.3.

Hardware characteristics of each component of the DDPS were transcribed to IMSIM input specification forms, and configuration spec fication forms were used to specify the connection of terminal elements and memory units to data buses. The DDPS components so represented are the Display Electronic Units, Display Units, Multiplexer/Demultiplexers, Display Driver Units, Keyboard Units, PCMMUs, and the memory units and CPUs of the GPCs. The data buses themselves are represented as IMSIM "datalinks" in the model (see Appendix B).

Depiction of the software for simulation is somewhat more complex than the hardware representation. It is necessary to exercise value judgement in deciding whether a program module is to be individually represented, combined with other modules for collective representation, or excluded from the model. Modules such as the Rate Gyro FDIR, require significant time for execution, but involve no change in system state which would affect loading. On the other hand, modules such as control segments, cause a significant change of state when executed but involve only inconsequential execution time. Some modules are called by several other modules, while others are called by only one.

Software is described for IMSIM in terms of schedulable "tasks", loadable "routines", mathematical expressions or tables which yield execution time as a function of the model state, and logic sequences which manipulate the system state. It was necessary to map the salient software characteristics of the DDPS into IMSIM counterparts so as to retain a meaningful correspondence between system and mcdel constituents, while conforming to the rules and constraints imposed by IMSIM. (It should be noted that this problem is common to all modeling processes, regardless of the tools used, since a model is normally intended to be only a suitable approximation of an actual system.)

Schedulable processes such as SPECS, OPS, and cyclic executives were designated as IMSIM tasks, and logic sequences were developed to schedule them as a function of the simulated clock, externally introduced events, or the simulated system state (e.g., mode or pending keyboard request). Program modules which are executed for a specific task, or for a specific set of tasks, were collectively described as "routines". For each routine, a mathematical algorithm was prepared which indicates the amount of computation to be simulated when a task which employs the routine is activated, as a function of the system state at the time of activation. More than one routine may be employed in performance of a task. For each DDPS program module which significantly alters the system state when executing, a similar change was programmed into IMSIM as a logic sequence, and was synchronized for concurrent execution with the appropriate task.

Sizing of program modules was not a significant factor for the model, since dynamic memory allocation and loading are not characteristics of the ALT, and they therefore have no impact on system loading.

Data transmission within the DDPS is described to IMSIM in terms of "messages". A message can define a set of transmissions, whether parallel or sequential, and with varying origins and destinations. All transmissions simulated for the DDPS are between the memory of a GPC and some other unit (e.g. a MDM or PCMMU, or even another GPC memory in the case of intercomputer communication). Similar transmissions such as reading of data from the three IMUs, are described by a single message which represents concurrent transmissions from FF01, FF02, and FF03 (see Appendix E for abbreviations) to the GPC memory. Messages are associated with tasks and are synchronized to task performance; e.g., if performance of a task is deferred or interrupted for higher priority processing, its associated transmissions may be delayed (but not interrupted).

The general rules used to specify transmission lengths and execution periods are (a) maximum transmission lengths, (b) biased random execution of alternate or optional program sequences, and (c) 130% of estimated average periods for sequences for which precise timing figures were not available.

1.4 APPLIED WORKLOADS

The workload specification for the DDPS model is actually an integral part of the software representation, but it must be activated and controlled by an event schedule which effectively specifies parametric values for the simulated software. Various event schedules were prepared to represent segments of the ALT airborne and flight phases. Each schedule was designed to provide a realistic sequence of events with the additional objective of causing maximum stress during a critical time period. The event schedules were developed and modified in the course of the iterative process of dynamic simulation and analysis of results.

1.5 DYNAMIC SIMULATION

SDC initially performed a series of computer runs with the DDPS model for validation and verification against predicted performance under unsophisticated loading. Subsequently, a series of "production" runs was conducted with sophisticated stress loading. The automatic monitoring and data reduction facilities of IMSIM were augmented with special software probes and reports to obtain the maximum of useful information from the runs, and to simplify extrapolation of results to predicted performance of the DDPS. IMSIM is a discrete event simulator and generally functions in a deterministic mode, although random behavior can be simulated by drawing pseudorandom numbers from built-in number generators. Randomness was incorporated in the delivery of calculated execution times for some routines and is discussed in paragraph 5.2.4.2.

One major simplification of DDPS simulation was introduced for most of the computer runs. Since the GPCs of the DDPS are all organized as a redundant set for the ALT, they must necessarily perform identical functions in close synchronization. In fact, the GPCs are precisely synchronized in the model unless a perturbation is explicitly introduced. Thus, no additional information is obtained from simulating the functions of four GPCs in a redundant configuration as opposed to a single GPC insofar as processor loading is concerned. Since simulation of parallel computations must be performed serially on a simplex computer, it is both cost-effective and efficient to eliminate the redundancy in the model. Note that intercomputer communication is still simulated among the four GPCs in order to achieve a realistic load on the ICC data buses and to properly represent ICC activity for the single GPC. Some runs were made with the four GPCs simulated as four active, separate virtual machines, to verify the above.

1-5 (Page 1-6 Blank)

Data produced from each simulation run include a history of the important events and activities, a summary of the final state of the model, and statistics on resource utilization and software functions. Snapshots were often taken of the dynamic state of the model in order to investigate stress situations in more detail.

1.6 SIMULATION ANALYSIS

Results of simulation runs were analyzed to determine how the simulated DDPS performed under specified workloads and what workload variations should be considered for subsequent runs. The data from history outputs (see Appendix C) provide specific information on task contention for resources and the maximum interference in performing each type of task. The history output also provides valuable insight regarding patterns of behavior in DDPS operation and situations of peak strain. The summary results (see Appendix D) provide information on backlogging of tasks for CPU service, delays incurred in performing I/O, system component utilization, and statistics on contention for resources. System status information yielded clues as to potential system behavior under different conditions, which could then be imposed for subsequent simulation runs. In consequence, data were accumulated from the series of runs which describe the DDPS model behavior and performance under a variety of stress situations. Subject to the conditions and assumptions detailed in Section 5, SDC is confident that the model accurately reflects the operation of the DDPS and that the results described in Section 2 are indicative of the expected operational performance of the DDPS.

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2. RESULTS

2.1 HARDWARE CONFIGURATION ANALYSIS

SDC conducted a study and analysis of the DDPS hardware system as a prerequisite to development of the model. The study was confined to investigation of components involved in data transmission and processing, and the interconnection of the components. The subsequent analysis determined the loading characteristics of components and the constraints under which they interact. Emphasis was placed on consideration of hardware functions that operate on a time scale of a millisecond or more.

The DDPS system with which the investigation was concerned is the ALT configuration as specified in Reference 7, the Level A Hardware Specification. Components, that are not employed during airborne of flight phases of ALT were nevertheless analyzed and are represented in the DDPS model for completeness, and possible use in later studies. The ALT configuration as it was viewed for the purpose of the analysis and model construction is depicted in Figure 2-1. The principal factors in the makeup of this configuration are: (1) four independent computers which can be forced to operate in synchronized or lockstep mode, (2) numerous and varied peripheral equipments which may perform local functions asynchronously with the computers but with which the computers must regularly communicate, and (3) a network of data buse. Which provide redundant paths between components for communication, and which permit broadcasting of data to several components.

Analysis of programmable components such as the PCMMUs and IOPs indicated that the potential for variations in their operation would not have significant impact on the overall system loading at the millisecond level of discrimination; i.e., they can be treated as essentially hardwired components with relatively fixed behavioral characteristics. Local data transfer functions such as those between DEUs and connected keyboards and display units were considered to have minimal impact on the overall system and could safely be integrated with the behavioral characteristics of the unit in direct communication with the computers (e.g., DEUs and MDMs).

In summary, the analysis indicated that the ALT configuration should be treated as a computer-oriented data processing system, with a bus network and bus terminals, to and from which data are transmitted to the computers.

2.2 SOFTWARE STRUCTURE ANALYSIS

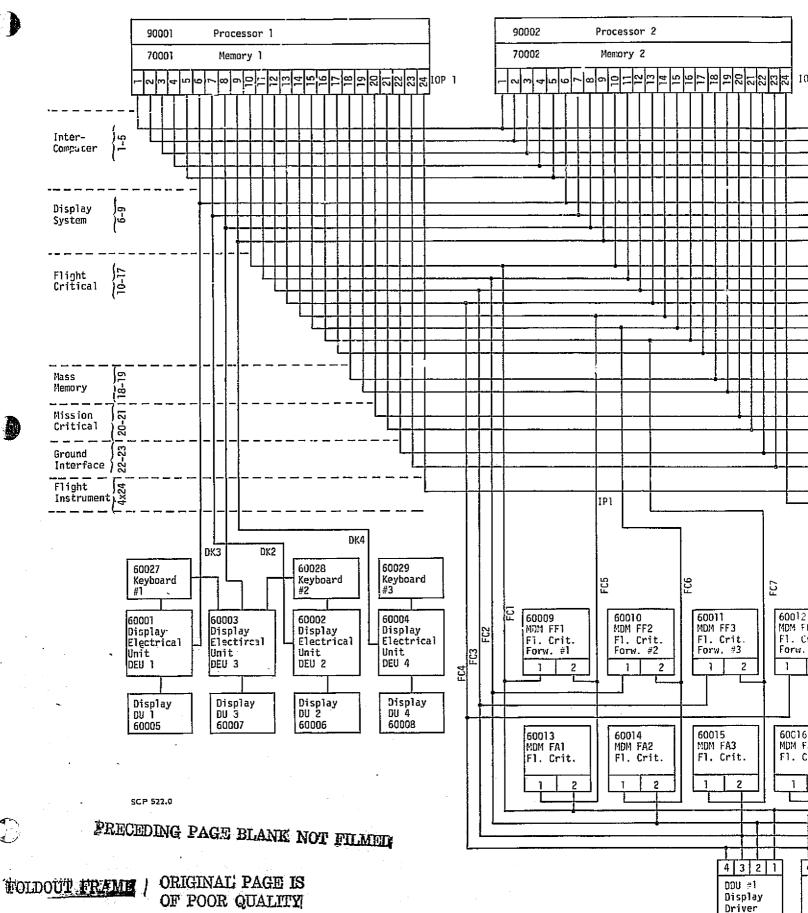
Through the structural analysis of DDPS software, SDC determined the conditions and methods for invoking all of the program modules. The hierarchical organization of the DDPS software and the documentation techniques employed in the design specifications enabled a systematic approach to the development and parameterization of a software model. The control interface specifications and the structured control flow proved particularly useful in this effort.

Module invocation is either a direct or indirect call from another module, or activated as a scheduled process by the Flight Control Operating System (FCOS). The scheduled processes which are significant to system loading

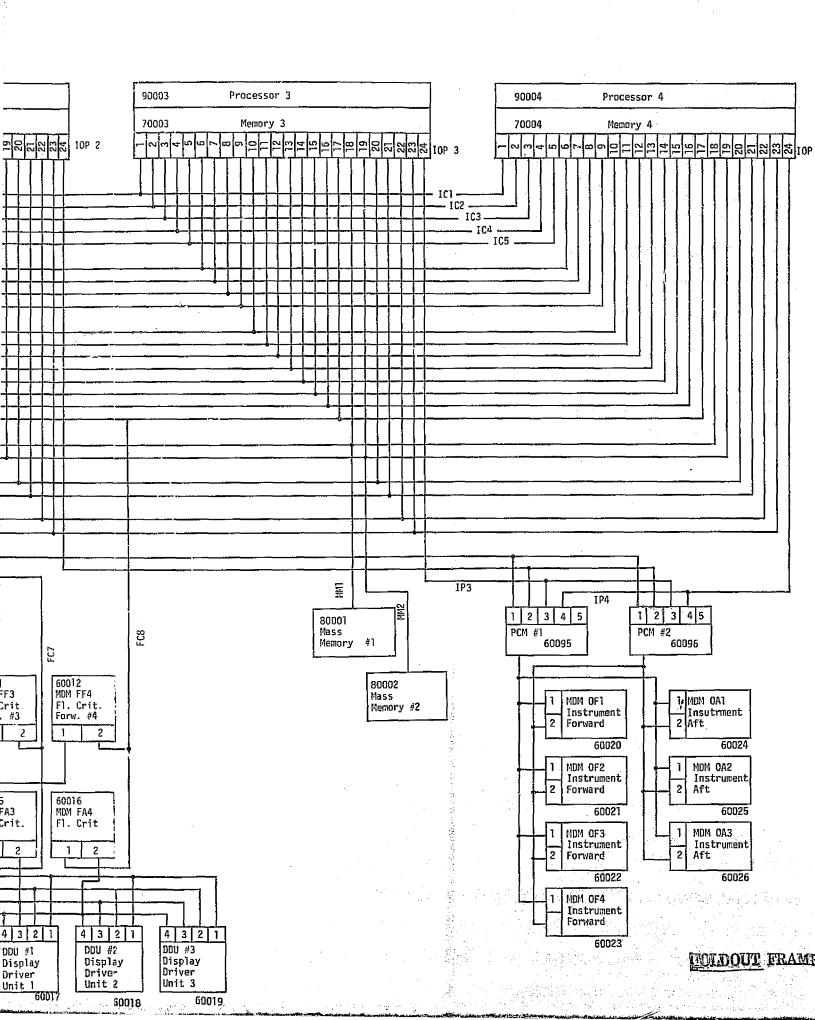
Figure 2-1.

Unit 1

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IMSIM Simulated ALT Configuration for the Space Shuttle Orbiter



during the airborne and flight phases of ALT are listed in Table 2-1, together with conditions for executing each. Virtually all computation performed by the CPUs is for these processes; i.e., these are tasks to be performed by the CPUs using the program modules as tools. Certain of the processes are used only to effect mode or state transitions; these include the various control segments and the Navigation Transition Task. They occur infrequently and involve negligible processing. A class of "cyclic" processes deals with activities which must respond to events in a timely manner. Processes of this class are scheduled during appropriate phases of the mission, to be activated at frequent intervals. The bulk of computation and data processing is either performed as low priority, long-term tasks, or as a series of short segments which can be incorporated in higher priority cyclic tasks.

Since the DDPS is required to deal with fluctuating loads and possible component failures under severe real-time constraints, the software is designed for self-adaptation to environment and demands within specified limits, and "tuning" parameters have been incorporated to ensure that it meets stated requirements through effective utilization of the DDPS resources. Three features which have been incorporated in the software design facilitate fine tuning for optimum performance: (a) a priority/interrupt system for scheduled processes, (b) distribution of recurrent functions among cyclicly scheduled processes with individually assigned frequencies for execution, and (c) use of a central dispatcher to call modules as subfunctions of a cyclic process, at multiples of the fundamental interval for the process.

During ALT airborne and flight phases, all I/O control is concentrated in four cyclic tasks and one event-triggered task; viz., the System Software Interface Processor, the Fast Cycle Executive, System Management Data Acquisition, the Cyclic Display Processor, and the User Interface Control Supervisor. In general, I/O is initiated by these processes through calls on FCOS, and the processes may yield control of the CPU and enter a "wait" state until the requested I/O is complete. Since I/O requests can be enqueued for execution by the IOPs, the CPU can be assigned to lower priority processes during such waiting periods.

Analysis of the software generally did not include consideration of the mission-oriented aspects of the DDPS; i.e., logical intent, mathematics, reliability and information content of data, etc., were not investigated except as required to determine their potential loading impact on the DDPS. This view from a data processing standpoint has determined that certain combinations of functions can be invoked concurrently, which are probably not logically consistent with each other or with the state of the system in the context of mission requirements. For example, it appears to be possible for an IMU calibration SPEC to be invoked during flight, although this is a time-consuming activity which is indicated as a preflight SPEC in Software Awareness Memo #10H for FSW Process Priorities (Reference 34).

Table 2-1. Significant Scheduled Processes of ALT

Software Designator	Descriptive Name	NASA Priority*	Invocation
AIE	System Software Interface Proc.	250	40 ms intervals
GEF	Fast Cycle Executive	250	40 ms intervals unless mode 200
GMA	Minor Cycle Executive	242	40 ms intervals unless mode 200 and platform not released
GAD	Mated/Drop Test Idle Mode	238	40 ms intervals during mode 200
SDA	SM Data Acquisition	234	50 ms intervals
DMI	MCDS Input Processor	230	200 ms intervals
GEM	Mated/Drop Executive	228	80 ms intervals
DMC	User Interface Control Supervisor	226	For MCDS or ICC msg, or applic.
GAA	Mated/Drop OPS Control Segment	218	For OPS2 message
SF0	SM Flight OPS Control Segment	210	For OPS2 message
GuC	IMU Operation SPEC Control Seg.	202	For SPEC message
GUH	RM-NAV SPEC Control Segment	198	For SPEC message
GUI	RM-CONT SPEC Control Segment	194	For SPEC message
GUK	NAV/TARGET Update SPEC Control Seg.	190	For SPEC message
GUA	Horîzontal Situation SPEC Control Seg.	186	For SPEC message
GUB	Vertical Situation SPEC Control Seg.	182	For SPEC message
DCI	Cyclic Display Processor	142	TOO ms i: tervals
ARA	GPC Switch Monitor	138	1000 ms intervals
DGI	LDB I/O Processor	134	40 ms intervals
GET	Navigation Transition Task	125	once for mode 204 for Navigation Transition Event
SDM	SM Performance Monitor Ctrl.	122	500 ms intervals
GEN	TAEM Navigation Cycle Executive	118	2000 ms intervals after platform release
GMG	IMU Major Cycle Executive	114	320 ms intervals for IMU function
GMY	IMU Velocity and Tilt	110	as SPEC option
GTX	FCS/DD Dedicated Display Checkout	106	as SPEC option
GMT/GMU/GMI	/ IMU Calibration	80/85/90	as SPEC option
GMX	IMU Gyrocompass Alignment	75	as SPEC option
GMS	IMU Attitude Determination		as SPEC option
*higher val	ues indicate higher prioritie	s	

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2.3 DYNAMIC SYSTEM BEHAVIOR

The dynamic behavior of the DDPS model was recorded on an event-by-event basis for each of the simulation runs, in the form of history printouts. As expected, all runs show a continuing conflict among the cyclic processes which were synchronized on 40 ms clock pulses (see the graph of the timeline in Figure 2-2). Since the Software Interface Processor (AIE) has highest priority, it always starts the cycle and initiates ICC transmissions, after which it enters a waiting state. This gives the Fast Cycle Executive (GEF) an estimated 1 to 2 ms to perform before AIE resumes and completes. Following AIE completion for a cycle, GEF runs to completion (it involves not waiting for transmission and hence does not provide an opportunity for lower priority processes to use the CPU until it completes). Upon its completion, the Minor Cycle Executive gains control of the CPU until its completion. This sequence of activity is estimated to require between 12 and 18 ms of the 40 ms cycle, depending mainly on the activity of GEF.

If the assumption is made that the AIE waiting interval is insufficient to permit all GEF I/O to be initiated, then the uninitiated remainder will be deferred for approximately 4 ms until AIE completes. This may be expected to cause some Read requests to be shifted back and forth between the interval and the completion period of GEF in successive cycles. Such a condition would strain or exceed the software systems performance requirements set forth in the Computer Program Development Specification, Volume 1, Book 2, Level A Software (Reference 7). Such variations in reading do occur in the simulations.

Start and completion times for the remainder of the scheduled processes vary as a function of the applied workload. Start and end variations for these tasks are tabulated for two computer runs in Tables 2-2 and 2-3. Each start (or end) variation is determined from the history printouts by subtracting the time of the triggering event (e.g., keyboard input) from the start (or end) time. Table 2-2 shows the result of a typical loading for a 1.1 second simulated flight segment of ALT. Table 2-3 shows results for a 1.24 second period which encompasses Separation.

The first 40 ms cycle is excluded from the derived statistical measures. In fact, the heavy activity of the first 40 ms cycle will recur every 16 seconds, as the cycles of the various processes are in phase at 16-second intervals. Process activity during such periods is depicted graphically in Figure 2-3.

System Management Data Acquisition (SDA) operates on a 50 ms cycle, and hence conflicts with the high priority cyclic processes every fourth cycle. Thus, its initiation (and completion) may be deferred as much as 14 ms, with an average observed variation of 3.5 ms and a standard deviation of 5.3 ms under normal loading. With a heavier loading as shown in Table 2-3, the average delay rises to 4 ms, with a maximum of 18 ms.

The Mated/Drop Executive (GEM) also experiences longer delays in starting under the heavier workload ranging from an average of 14.8 ms to 15.8 ms, although the maximum delay remains 17 ms. The delays are consistently in the range of 13 to 17 ms, and produce a relatively small standard deviation of 1.5 to 1.8 ms.

The MCDS Input Processor (DMI) was able to complete its function within 19 ms of activation in all instances of simulated input. This is within 10% of its cycle period. The User Interface Control Supervisor was generally able to respond to the keyboard inputs within 8 ms, with an average response time of

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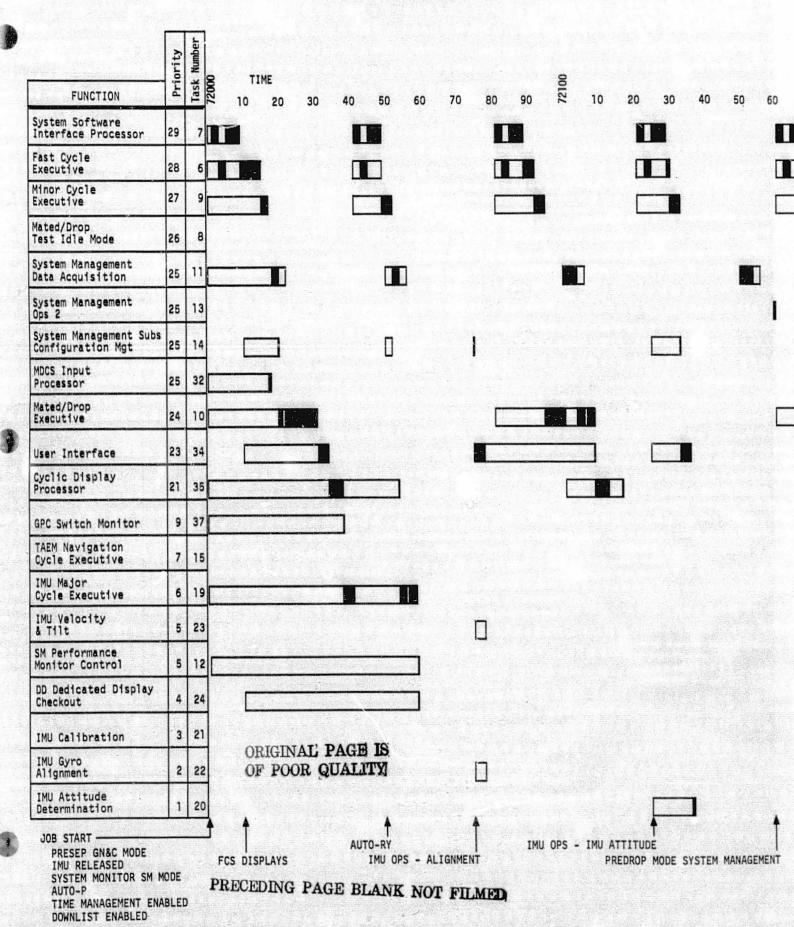


Figure 2-2. Timeline Graph of Cyclic Tasks

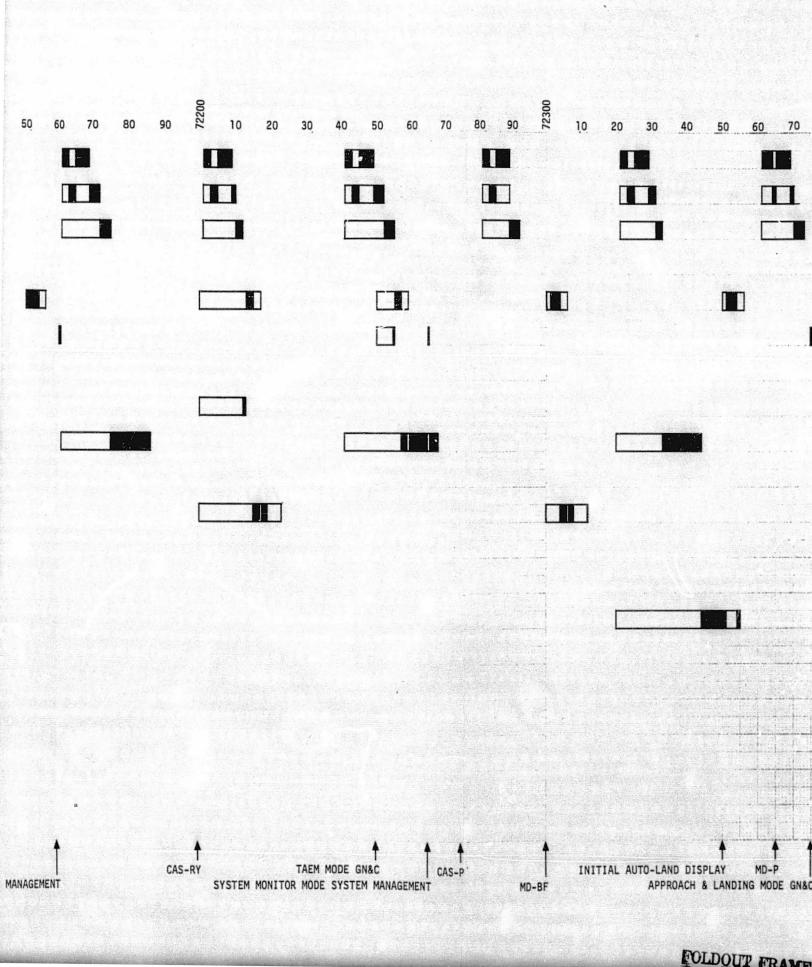


Table 2-2. Time Variations for Processes, Schedule JSCA06

			30 ms	Cyc1e				50 ms	Cycle			Irı	egular	
		GEM ((80)	GMG (320)	SDA (50)	DCI(100)	DMI (200)	SDM(500)	ARA(1000)	SFO	DMO	3
		Start	End	Start	End	Start	End	End	End	End	End	End	Start	End
		21* 15 15	32* 29 26	62	70	18* 0 0	23* 6 6	62* 35	19	70	23	8 0 0	22* 4 0	25* 6 34
		14 17	26 27 25 28	27	57	0 13 3	6 18 8	30	14			0 0 0	8 0 0	11 26 18
		13 13 16	26 23 27	27	35	0 0 14	6 6 19	16 40	15	·			0 ' 3 5	28 5 5 10
		13 16	24 27	13	21	1 0 0 12	6 6 6 17	14 27	13	14			0 0 0 22	10 10 10 24
				13	ZI	3 0 0	8 6 6	16	13			2	0	18 10
						13 1 0	18 6 6	54 17	14	_				
						0 11 2	6 16 7	26	12	26	. •		No.	
4.00	Avg. S.D.	14.8 1.5	26.2 1.8			3.5 5.3		27.5 12.8					3 6	15.4 9.4

^{*}Data from the first cycle, on a 16-second period, are not included in Average Delay and Standard Deviation.

2.7 10.1

Irregular 80 ms Cycle 50 ms Cycle DCI(100) DMI(200) SDM(500) ARA(1000) DMC GEM(80) GMG (320) SDA (50) SFO Start End Start End End End End Start End Start End End End 18* 22* 25* 23* 62* 21* 32* -8 : 1.5 17.6 Avg. 15.8 27 9.6

Table 2-3. Time Variations for Processes, Schedule JSCA07

6.2 5.8

S.D. 1.8 1.3

^{*}Data from the first cycle, on a 16-second period, are not included in Average Delay and Standard Deviation.

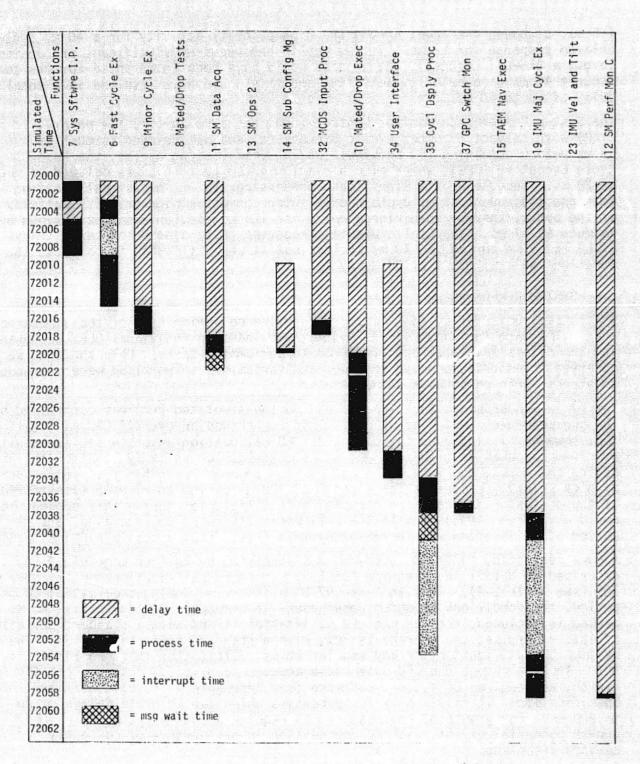


Figure 2-3. Delay Time for Functions Due to Priority

1.5 ms, although one input during the high-priority activity for a 40 ms cycle delayed response for 22 ms. If the key-in had required significant processing (e.g., a DISPLAY request), the process would have been interrupted for the subsequent 40 ms high priority activity, and this would have resulted in a total delay of up to 40 ms.

The System Performance Monitor Control (SDM) has a relatively low priority (122) with respect to other cyclic executives, and was delayed as much as 33 ms before obtaining CPU service. During peak loading cycles, the Major Cycle Executive (GMG), which also has a low priority (114), was delayed as much as 28 ms. Because of its significant processing, it may occasionally extend into the subsequent 40 ms cycle and be interrupted for high-priority activity of the cycle, thereby incurring a delay for its completion from the optimum by as much as 51 ms. The Cyclic Display Processor (DCI) also encountered delays of up to 50 ms during two 40 ms cycles, but it was still able to complete its functions well within its 100 ms cycle.

2.4 SYSTEM PERFORMANCE

Statistical data for system loading were gathered during each of the simulation runs. The data included average and maximum loads on individual DDPS components and the delays and interrupts incurred in performing tasks. Only the CPUs were observed to experience heavy loading, and variations in workload were introduced to stress these components in particular.

The run which produced the highest load on the simulated DDPS was controlled by the job schedule denoted as JSCAO5. This run showed an overall CPU utilization of 75%; however, it included invocation of IMU calibration which, while apparently not precluded by GN&C software design, is nevertheless an unlikely load for the DDPS during the Mated/Drop Test. The calibration process was subject to interruptions by high priority processes for a total of 178 ms during an elapsed time of 240 ms. If the processor had not been occupied with calibration during this period, it would have been 74% busy; with the calibration, it was 100% occupied, and the period of calibration was increased by 287% (i.e., from a possible 62 ms to 240 ms).

A more realistic, high-load scenario was specified by the job schedule JSCAO7, described in detail in paragraph 5.2.5.3. Processor utilization for this run was 70% (see Table 2-4). This includes 97.5% utilization during the initial 80 ms period, the conditions of which recur every 16 seconds. If the initial 80 ms period is excluded, the average CPU utilization is 68% with a standard deviation of 10%; otherwise, the average is 70%, with a standard deviation of 13%. The maximum CPU utilization for any regular 80 ms cycle (other than the first) is 88%. Thus, although the CPU duty cycle appears to have 30% reserve capacity for growth, as required of systems software (see Reference 7, Level A Software Specification), it exists only for processes which can tolerate delays of up to 200 ms. For growth of processes which require an 80 ms cycle, only 10-12% growth potential exists, without degradation in performance of currently defined processes.

Table 2-4 provides a synopsis of the CPU utilization by 80 ms time slices. It gives the idle periods in ms and processor utilization % for each of the 80 ms

Table 2-4. CPU Activity for JSCA07

80 ms Cycle Number	Cycle Start Time	(ms)	Idle Periods (ms)	% Busy
1	32001		2	97.5
1 2	32081		16	72.5
٠			2 4	•
3	32161		10	87.5
4	32241		13	67.5
			8	
5	32321		5 1	67.5
	JEJET		1	07.5
		1.4	ī	
			8	
6	32401		15 25	68.8
7	32481		ī	65
			20	
			2 5	4
8	32561		15	65
	· · · · · · · · · · · · · · · · · · ·		13	* .
9	32641		5	76.3
	A		9 5	
10	32721		6	48.8
			2	
			5 28	· •
11.	32801		1	65
			2	
12	32881		25 1	66.3
12	3200T		19	700.3
•			2	
	1 P. C.		5 7	81.3
13	32961	-	8	91.3
14	33041		13	66.3
			9	
15	33121		5 5	50
.			2	
			5 .	-1
. 3.			28	
Average wi	th Initial C	ycle		70.0
Standard I	eviation wit	h Initi		12.5
	thout Initia			67.7
otandard l	eviation with	HOUT IN	Triar cacie	10.3

time slices indicating their cycle start times. It also gives the average CPU utilization percent and standard deviation with and without the initial 80 ms heavy load period. These figures are graphically depicted in Figure 4-2, CPU utilization per 80 ms regular cycle.

The transport lag for the highest rate flight control functions was not specifically investigated. However, it is apparent that no significant time is spent in transmitting either way between the MDMs and GPC memory because of the high data transfer rates of the MDMs and buses, and because flight-critical buses are dedicated for these transmissions. If delays do occur, it would be the result of contention between the Fast Cycle Executive and the System Software Interface Processor for the CPU, or of excessive computational requirements for the Fast Cycle Executive. The latter computational requirement is estimated to be less than 15.8 ms in the worst case. Although it should be possible to organize computation for the Fast Cycle Executive so that critical output occurs earlier in the process, it should be noted that this time exceeds the limit of 15 ms specified in Reference 7, the Level A Software Specification. The System Software Interface Processor is estimated to require a maximum of 3.7 ms per cycle and may have serious impact on the transport lag if allowed to interrupt the Fast Cycle Executive. The Fast Cycle Executive may be further delayed if it performs concurrently with ICC data transmission. This transmission reduces memory accessibility to the CPUs by one third; if the transmission requires 2 ms, concurrent processing time is increased by 0.67 ms.

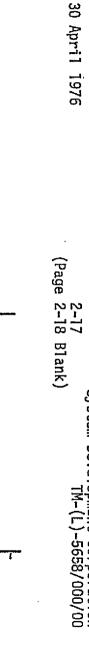
Loading of other components and traffic on buses can generally be characterized as light. The nature of the bus network, and the configuration of DDPS components essentially eliminates data traffic congestion. The most heavily loaded buses and bus terminals, as indicated by simulation summary statistics, are:

PCMMU #1 and its bus (IP1)

18% utilization

ICC buses

15% utilization



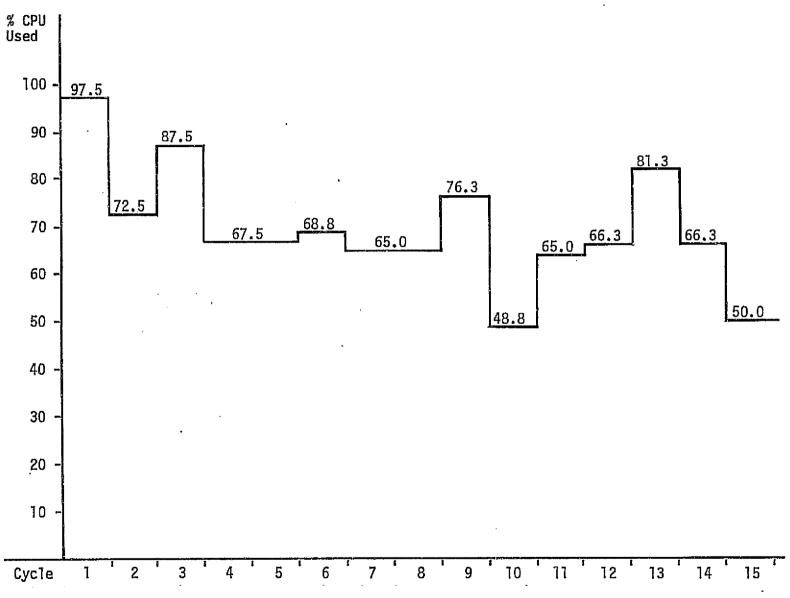


Figure 2-4. CPU Utilization per 80 ms Regular Cycle

3. CONCLUSIONS

3.1 SYSTEM CAPACITY

The CPU duty cycle of each computer appears to have a 30% reserve capacity for the major cycle (assumed to be 320 ms) as required. For processes having an 80 ms cycle, reserve capacity is estimated at 10%.

The databus network is only lightly loaded and is configured so that virtually no message congestion occurs. The ICC buses operate at capacity during memory to mem remission and impose the most significant I/O loads on memory during riod of every 40 ms cycle; however, this is estimated at 30% of mem cesses for 5% of the time, or 1.5% of the capacity for memory access. Data uses are estimated to have reserve capacity for transmission in excess of 80%.

In summary, the capacities for processing and data transmission of the GPCs and the databus network appear adequate to support the Approach and Landing Test.

Memory capacities were not studied. See Section 3.3 for discussion on this subject.

3.2 RESPONSE CHARACTERISTICS

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Since the System Software Interface Processor is assigned the highest priority of scheduled processes, it is executed on schedule and can respond to I/O completion with virtually no delay. Offset adjustments in the schedules for the second and third highest priority cyclic processes - the Fast Cycle Executive and the Minor Cycle Executive - should make it possible for both of these processes to execute on schedule, and for the Fast Cycle Executive to respond immediately to I/O completions.

Response of other processes generally deteriorates as priority decreases. Delays in completion of 25 - 35 ms are typical, although these can probably be reduced by 10 ms through offset scheduling for the cyclic processes. Delays of 40 - 70 ms were experienced in completing longer-running processes (i.e., Cyclic Display Processing, Performance Monitoring, and IMU Major Cycle Processing) because they overlap two successive 40 ms cycles and were subject to interruption by the high-priority processes of the second cycle.

Only the high-level timing requirements set forth in Reference 7, the Level A Software Specification, were considered in determining the suitability of the response characteristics indicated by simulation; the applications software function timing requirements, which were mentioned in this reference as being specified in Level B CPDS documents, were not available at the time of the requirements analysis. Performance of the functions of the Fast Cycle Executive can be made virtually independent of other processes by priority and scheduling offsets, and is therefore only determined by the programming of functions executed for the process and the dispatching algorithm used in calling the functions. Variation in initiation and input times can probably be confined within the specified limits, but it is not clear that lag time for flight control functions is less than the required 15 ms period.

A cursory study of the just-received Detailed Software Design Specifications for GN&C (Reference 29) indicates that significant effort has gone into design of the Fast Cycle Executive to minimize its response times. However, this document was not received by SDC prior to the completion of the analysis phase of this contract, and this information was not subjected to detailed analysis, nor was it used in modeling and simulation of the DDPS.

3.3 ADAPTABILITY

The DDPS design, as specified in the Level A Software Requirements (Reference 7), limits the scope of the software to meet mission requirements, but does not impair the capability for adaptation to new requirements and changing environmental conditions. On the contrary, such capabilities are explicitly incorporated in design specifications. The concepts of hierarchical software structure, modular coding, and centralized data base and dispatching control provide great flexibility for adapting the software to meet new demands. The traceability provided by design specifications enables the tracking of data elements from source to destinations and the tracing of program logic through the software structure. It appears to be relatively easy to locate and change any portion of the software and to determine impact on the remainder of the system. Additional logic can readily be "plugged in" to the system, insofar as programming and data manipulation are concerned.

Changes or additions to the software which affect the critical timing of DDPS software pose special problems. As discussed in the Software Analysis (Section 2.2), special features have been incorporated in the software design to facilitate tuning of the system to meet the real-time requirements of Shuttle Orbiter missions. The scheduling and dispatching facilities appear admirably suited to meet these needs, and to accommodate future requirements as they become known, without necessitating changes to the basic software structure or to logically disappointed functions.

The most severe constraint on adaptability of the DDPS appears to be the amount of main memory available for the GPCs. The Level A Software Requirement specifies a 15% reserve capacity to be retained in main memory for growth. SDC did not investigate memory requirements for software since dynamic loading of software is not performed in the ALT; in any case, data software sizing was not available for most of the applications modules. However, on the basis of SDC's previous experience with similar system development, it is reasonable to expect difficulty in maintaining the specified reserve.

The DDPS design specifications provide for system parameterization and control interfaces which essentially establish a logically open-ended system. The upper-level structure and components of the software are rigidly specified Operational Sequences, Modes, and Displays, but the provisions for Specialist Functions and Item inputs act as escape clauses to permit additional facilities to be incorporated. The options and electives for system control should be itemized as requirements in the Level A Software Specification and corresponding checks should be incorporated in the software to prevent undefined system status or inconsistent processes

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from being established. For example, as noted in Section 2.4, IMU calibration was simulated during flight phase although this is estensibly a preflight process. This was done because analysis of the design specifications did not uncover software checks which would preclude activation through an option of the IMU Specialist Function.

With the above mentioned qualification, the software is readily adaptable to future requirements.

4. RECOMMENDATIONS

The following recommendations have evolved from extensive analyses of the results of these simulations, and also reflect detailed SDC studies of the proposed hardware and software structures that preceded these modeling efforts.

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4.1 DDPS CONFIGURATION RECOMMENDATIONS

- a. The estimated 10% expansion margin for 80 ms cycle processes may not be adequate. The possibility should be examined, and both effects and remedies for inadequacy should be detailed. Additional simulations should be performed as neccessary to verify these remedies.
- b. The memory space requirements of the software should be monitored closely during development. If the required 15% reserve is infringed upon, efforts to reduce space requirements should be concentrated on changes in program organization and algorithms; coding techniques and shortcuts which stretch or break the rules for DDPS software development (i.e., rules regarding structured programming and compool-defined data) will degrade its adaptability and interfere with subsequent maintenance.
- c. Greater control over process scheduling and response characteristics can be achieved through the use of counters to record event occurrences, instead of simple flipflops. An example of the need for this capability is evidenced by the phase counts employed by the hybrid dispatcher to control module execution on multiples of the basic cycle of a process. This concept should be incorporated as a fundamental design specification and employed liberally for frequent synchronous and asynchronous events. Note that it is not necessary to reduce or reset such counters during the mission. They may be tested against threshold values which can be continually raised by 1, 2, 8, or any number to cause response at the desired multiple of the event occurrence. This not only serves the purpose of the hybrid dispatcher, but allows self checking by a module to determine if it is missing cycles because of time and priority constraints.
- d. As discussed in Section 3.3, more checks should be specified and incorporated in the software to ensure proper keyboard inputs for the system state. "Software Design Specification Part II: Approach and Landing Test (ALT) Detailed Design Specification Guidance, Navigation, and Control" (Reference 29) indicates the possibility of placing the system in an "unknown and unverified state". Furthermore, even theoretically legal requests may activate functions which are not consistent with the mode or phase of the mission. To deal with these problems, legality and reasonableness checks should be incorporated in the User Interface software. Such checks could improve reliability and aid flight personnel in interacting with the DDPS, and would expand design specifications to close loopholes in requirements which might be

4-2

inadvertently used as a convenient, but unsystematic, adaptation of the software system to meet unforeseen demands. SDC recommends that attention be directed to a study of this area.

e. System tuning is necessary to meet critical response requirements, and has been planned for in the design specifications. SDC recommends that as much tuning as possible for dynamic functions be performed through the use of computer simulation, prior to completion and exercise of actual software. Use of scheduling offsets, priority changes, dispatching, etc., can readily be tested in a variety of combinations prior to experimentation with the real system.

4.2 AUGMENTATION OF SIMULATION EFFORTS

- a. The dynamic, discrete simulation model of the DDPS was developed by SDC to fulfill the objectives of the DDPS study. Its operation has been verified and validated against requirements and currently available performance data. SDC recommends its continued use as a device for experimenting with scheduling algorithms and applied workloads for the DDPS under a variety of conditions which would be difficult or impossible to create for the actual system. The monitoring and reporting facilities of the model could not be effectively incorporated in the real system; no other approach can enable system designers to obtain more insight into the dynamic behavior of the DDPS during its development. Use of the model also provides project management with an overview of the dynamic, as well as static, character of the DDPS.
- b. Continued use of the model should include incorporation of up-to-date information on detailed design specifications, estimates of program module timing, and message lengths and frequencies, with emphasis on key functions such as GN&C. To accomplish an extended analysis of GN&C functions, most of the hardware specifications (IMSIM Forms 6 through 14) will remain unchanged, but virtually all of the scitware workload parameters (IMSIM Forms 2 through 5) must be redone completely. Efforts to be accomplished include aspects of the following activities:
 - Requirements analysis
 - 2. Test design
 - 3. Model adaptation and parameterization
 - Model execution
 - 5. Test analysis and documentation
- c. Further effort should be expended to determine the greatest stress situations which can develop during the ALT mission, and results should be employed in constructing workloads for the model. Additional conditions which should be investigated via simulation include system errors and component failures. These can be simulated according to precise schedules to achieve maximum impact.

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- d. The model has direct application to the study of DDPS performance for missions and test phases. In particular, Operational Flight Test requirements for the DDPS need to be analyzed from a dynamic functional standpoint to determine behavior with an additional simplex mode GPC and software execution for new major functions and modes. The impact of additional dynamic loading for activities such as uplink-downlink and payload monitoring should also be investigated.
- e. While the DDPS model is well suited to the investigation of dynamic functions at a resolution of 1 ms, it should not be indiscriminately used to represent all such functions of the DDPS. Functions which are independent of each other, or at least series-related, should be individually modeled as required to observe their individual behavior.

SDC has designed the DDPS model to represent the functions of the GPCs, the bus network, and bus terminals as an integrated system in which feedback is an essential characteristic. Localized activity, such as occurs in DEUs, IOPs, and PCMMUs, may normally have negligible impact on the DDPS operation at the 1 ms level of discrimination, but may still require simulation to determine situations in which they become saturated or otherwise loaded so as to change their operating characteristics and affect general system performance. The precise steps by which the Process Management component of the Flight Control Operating System monitors events and schedules processes should be simulated in detail to determine performance and dynamic loading conditions, and used as an aid in making systematic, effective improvements in scheduling algorithms and methods of implementation. In this manner, a variety of aspects of synchronous and asynchronous approaches can be evaluated effectively.

f. SDC also recommends that consideration be given to the construction of models of system components to study their behavior through simulation on appropriate time scales (e.g., to a microsecond level). Such models may be built using IMSIM, as was the DDPS model, or they may be constructed using the underlying general-purpose simulation package - MODLIT - upon which IMSIM is based. Both of these tools may be used to construct models which can be operated dynamically by discrete simulation to yield useful data on behavior under conditions which are difficult or impossible to duplicate in real systems. Furthermore, processes such as intercomputer communication may be represented at more than one level of time resolution in different models. For example, a fine-resolution model can be used to determine "macroscale" characteristics for inclusion in another model.

5. TECHNICAL DESCRIPTION

The following paragraphs describe in detail the objectives of the Dynamic Loading Analysis Study and the efforts performed under each of the tasks defined in Section 2.1 of the Statement of Work.

5.1 INTRODUCTION

High-speed digital computers have been increasingly applied to the analysis and design of complex systems. One of the most useful techniques for such applications is that of discrete simulation, in which the system is represented in the computer as a dynamic model which changes its state with the stepwise passage of simulated time.

The IMSIM model has been developed to aid in the investigation of systems which include computers. It is constructed upon the MODLIT Discrete System Simulator. In effect, IMSIM is a general model of a computerized transmission system, which can be tailored to represent a wide variety of configurations, components, and applied loadings. Furthermore, as a fully interactive model, it enables the user to monitor its behavior and to make dynamic modifications during simulation.

The objectives of the Dynamic Loading Analysis Study and the model goals are presented in paragraph 5.1.1. The guidelines and assumptions for the model development are delineated in paragraph 5.1.2. A brief conceptual overview of IMSIM is given in this introduction in paragraph 5.1.3, and the overall approach to the model development, applied workloads, and dynamic simulation is given in paragraph 5.1.4.

5.1.1 Objectives and Model Goals

The primary objective of the Space Shuttle Orbiter Digital Data Processing System Dynamic Loading Analysis effort was to investigate the dynamic behavior of the Orbiter's data processing subsystem during specific operational sequences, in order to identify and formulate resolution of potential problems for critical performance areas.

To meet this objective, the generalized IMSIM model was adapted and parameterized, so that the Space Shuttle's hardware and software functions were properly represented in this model.

The model goals were established as a result of the work performed under the Data Systems Requirements Definition task (Statement of Work task 2.1.1)

From a study of the overall dynamic hardware and software data flow requirements it was determined that the IMSIM model should be constructed within the following set of basic guidelines:

 The model should be configured so as to allow statistical data generation on the dynamic behavior of central processing units, which will be the focal point for analyzing system performance.

- Suspected potential data flow problem areas (defined by a Sensitivity Analysis) should be modeled such that data could be generated to determine if and/or to what extent these areas are critical in respect to system performance.
- The model should be designed for a specific operational configuration and include only that hardware and software required to simulate the functional dynamics required for that operation, i.e., Shuttle Orbiter Data Processing Subsystem characteristics such as operational reconfiguration, fail and fault redundancy, and BITE should not be incorporated in the model.

5.1.2 Guidelines and Assumptions

- 5.1.2.1 <u>Model Guidelines</u>. The following NASA specified guidelines for the IMSIM model were defined in a project coordination meeting held in August 1975 and in subsequent coordination communications:
 - a. The simulation model will be adapted, parameterized, and executed for the Approach and Landing Test (ALT) configuration for the Mated Flight/Drop Test.
 - b. The specific configuration to be simulated is the ALT Memory Configuration #2 as specified on page 6-15 of Computer Program Development Specification Volume I, Book 2 (revised) #SS-P-002-120A-I-System Level A Requirements, Software, (Reference 7) and restated in revision B, dated 26 September 1975.
 - c. A four-GPC redundant configuration with data paths to the multiplexer/demultiplexer (MDM) hardware level is to be simulated.
 - d. ALT Memory configuration #2 is to include the Downlist format #1, as specified on page 4-1 of Computer Program Development Specification, Volume I, Book 4, #SS-P-0002-140, Downlist/Uplink Software Requirements (Reference 9).
 - e. The GN&C Mated Flight/Drop Test OPS and the SM Flight OPS will be the operational sequences for the model.
 - f. Hardware units that will be excluded from the ALT configuration are as follows:

Ascent TVC Driver
Forward Reaction Jet Driver
Reaction TOT OMS Driver
Star Tracker and Light Shield
Network Signal Processor
S-Band Network Equipment
Doppler Extension
Payload Signal Processer

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Rendezvous Radar Transition Hand Control Unit MDMs for LL, LR, and OT Engine Interface Unit Master Events Controller.

- 9. There will be no uplink capability for the ALT configuration. Downlink will be accomplished via a direct interface from the PCMMU to the S-band system. The downlink data rate will be at 128 Kbps.
- h. The Downlist Data Controls Processor (DDC_DWN_LST_CONTROLS) will not be active during Mated/Drop Test.
- i. The GPC/PCMMU Data Cycle Synchronizer (DCS_SYNC) will not be invoked during Mated/Drop Test.
- 5.1.2.2 <u>Assumptions</u>. Based on the NASA supplied guidelines, the Approach and Landing Test (ALT) Functional Design Specifications (References 18 through 21), and the ALT Computer Program Development Specifications (References 10 and 11), the following assumptions have been defined for the IMSIM model:
 - a. IOP control activity and its memory access for commands have negligible impact on system functions at the millisecond level of perception, and therefore is not simulated. Data transmissions are associated directly with the processes which initiate or process them.
 - b. Only the processes within one GPC are simulated, based on the assumption that virtually identical loading of the CPU occurs in all members of a redundant set. Simulation of activity in all GPCs would simply increase operating times for simulation and would yield no additional information.
 - C. The User Interface Control Supervisor is only simulated for MCDS messages and Applications service. Completion of MM I/O service is excluded.
 - d. For Cyclic Display Processing (DCI_CYC_DISPLAY) and New Display Processing (DMC_NEW_DISPLAY) I/O is not suppressed for any DEU, displays are never frozen, and output is always a full page (509 words).
 - e. The GPC Downlist Formatter (DCD_DOWNLIST) is assumed to be enabled.
 - f. The Launch Data Bus I/O Processor is not employed during the Mated/Drop Test.
 - g. The DEU Loader (AIG_DEU_LOADER) is not scheduled during Mated/ Drop Test.
 - h. No change of state results from switches monitored by the GPC Switch Monitor (ARA_GPC_SWITCH).

- i. The following System Control processes are not simulated because they are irrelevant to the Mated/Drop Test: ASA, ASB, ASC, ASD, AIB, ARB, ARC, ARH.
- j. The computation associated with GNC OPS 2 Control Segment (GAA_OPS2_MATED_DROP_TEST) is included in the User Interface process (DMC_SUPER); hence, this process is not simulated as a task.
- k. The Preflight OPS Control Segment (GAV_OPS1_PRE_FLT) is not invoked during the Mated/Drop Test and is not simulated as a task. The Preflight Executive which is scheduled during mode 101 of OPS 1 is also not simulated but the Fast Cycle Executive and the IMU Minor Cycle Executive are started prior to simulation of the Mated/Drop Test.
- 1. IMU Calibration is assumed to be performed with only one type of calibration at a time (i.e., GMT, GMU, or GMV).
- m. The Control Segments for GMC Specialist Functions are assumed to involve negligible computation and are not simulated as tasks; they include GUA, GUB, GUC, GUG, GUH, GUI, AND GUK.
- n. ALT memory configuration #2 can be accommodated in GPC memory with no capacity problems.
- Task scheduling will be performed as follows:
 - a) Processing is interruptible by the executive and critical tasks (IMSIM tasks of service class #1).
 - b) Critical tasks have precedence and confiscation privileges over noncritical tasks in obtaining processors.
 - c) Scheduling is determined by task priority.
- p. All transmissions are to be over explicity defined data links and no implicit links are allowed.
- q. The CPU will not be interrupted in performing a task in order to initiate and service I/O (this function is performed by the IOP of the DDPS).
- r. A time resolution of 1 ms is sufficient for the investigation of DDPS processes as specified by the S %.
- s. Mass Memory Message Proceccing (DMP_MM_MSG_PROC) is not used in ALT.
- t. Reconfiguration does not occur in ALT.
- u. MCDS Major function change does not occur.
- v. CMPTR/CRT and CMPTR/BUS keys are not used in ALT.
- w. The ITEM DATA key sequence is not used.
- x. New displays are always sent to DEUl.

- y. Three DEUs are updated by Cyclic Display Processing (DCI CYC DISPLAY).
- z. The ICC Router (DME_ICC_ROUT) is referenced by the System Soft-ware Interface Processor (AIE SIP).
- aa. Each display update requires four scalar conversions and 10 item formattings.

5.1.3 Conceptual Overview of IMSIM

5.1.3.1 Hardware Representation. The equipment simulation categories used in IMSIM cover five basic types of equipment: memory units, storage units, computer processors, data transmission links, and a group called "devices" that includes all hardware not covered by the other four categories. Although there is no theoretical constraint upon the organization of processors and memory units, attempts by the computing industry to design control programs (operating systems) for various configurations of computers have resulted in the definition of a substructure for large computer systems. To realistically represent such systems for simulation, IMSIM includes the concept of the "virtual machine": a computer in which at least one processor can access all memory units. In its simulation runs, SDC has simulated the Space Shuttle's digital data processing system both ways, viz., as one Virtual Machine with four GPCs, and as four separate Virtual Machines.

Storage units and devices are generally considered as global (system-wide) system components, but can be viewed as local (to a virtual machine) when connected exclusively to a machine via data transmission links. Processors and memory units are always considered as local components. Data links are defined for use in connecting any components except processors, and have either local or global status, depending upon the configuration.

Inputs to IMSIM include the means for specifying characteristics for individual members of each of the component types mentioned, together with a description of the way in which they are to be configured. One other type of component is defined in IMSIM and is classified as hardware: the "data set". A data set may be viewed as a subdivision of a storage unit, and is intended to correspond to a file of data to be stored in the unit.

5.1.3.2 <u>Software and Workload Representation</u>. In order to study the dynamic behavior of a system representation by <u>IMSIM</u>, it is necessary to apply a load to the system. A workload structure has been incorporated in <u>IMSIM</u> which resembles that of the actual computer system. It includes general building blocks for rudimentary respresentation of computer programs and data and for describing data transmissions, and the means for organizing these elements into a hierarchical structure which is consistent with the hardware representation. The building blocks are denoted as routines, data blocks, and messages. These are combined into "tasks" which are units of work to be

performed by a single virtual machine. Tasks, in turn, are organized as a time-distributed network of steps which are collectively denoted as a "job"; a job is a unit of work to be performed by the overall system. This organization is depicted in Figure 5-1.

Routines and data blocks are always considered to be local elements of virtual machines, while messages may have either global or local significance, depending upon their individual characteristics and the hardware configuration. Inputs to IMSIM provide the means for specifying characteristics of individual elements, including constraints on assignment to virtual machines and sharability among concurrent tasks.

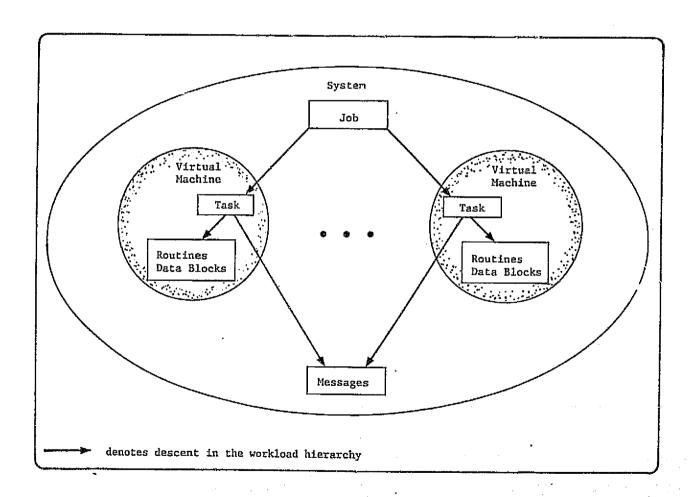


Figure 5-1 - Workload Structure in a Simulated System

5.1.3.3 Functional Description. The functional logic which is incorporated in IMSIM includes representation of hardware behavior, applications programs, and executive software. Distinguished system components - whether hardware or software - are represented by suitable MODLIT entities such as facilities and storages. Both the logic and the system components are generalized IMSIM capabilities which must be tailored to suit the system to be simulated. For this reason, IMSIM is designed to operate in two phases: initialization and simulation. In the initialization phase, IMSIM receives and processes "forms" which complete a system definition and describe a workload to be applied to the defined system during simulation. Certain system specifications can also be processed during simulation, thereby permitting the dynamic modification of the system.

The logic of IMSIM is expressed in terms of MODLIT logic blocks, and can be subdivided into eight sections:

- a. Processing of input specifications
- b. Processing of job requests
- c. Task preparation
- d. Task execution
- e. Element space allocation
- f. Message preparation
- g. Message transmission
- h. Task removal

The first of these constitutes the initialization phase. A portion of this phase together with the other seven sections, comprise the simulation phase.

5.1.3.4 <u>Preparation of Model Specifications</u>. This section describes the various specification forms which were used to complete the definition of IMSIM for representation of the Space Shuttle's DDPS and to define software and workload characteristics.

Each form is represented by one or more lines of input. Only the first 71 characters of each line are interpreted. Positions 1 through 70 contain the information to be read; position 71, if occupied by any character other than a zero, indicates that the next line in the input sequence is a continuation of the current line. Positions 72 through 80 are used for sequence numbers.

A double prime ('') in positions 1 and 2 or a quotation mark (") in position 1 indicates that the line is a comment which is used solely to annotate printed outputs. All input lines are interpreted on a free-field basis, i.e., one or more spaces separate successive fields.

The first field of each form contains an integer which identifies the form type. The layout line which follows the column headings line of each form description indicates roughly the magnitude of values for each field (e.g., nnnnnn) and signifies the optional use of a fractional value: nnn. means a fractional value is possible, while nnn means that only integer values should appear. If a fractional value is specified, it must be presented as decimal with at least one integer on each side of the decimal point, i.e., 5.01, 66.0, and 0.2 are legal but 5., 66., and .2 are not.

a. FORM 1 - JOB DEFINITION

Form	Job	Task Type	Priority	Nature	Go/NoGo	Immediate Predecessors
1	nn	nn	n	n	nnn	nn nn (to a maximum of 24)
E.G. 1 1 1	2 2 2 3	6 15 8 6	1 3 1 2	1 1 1 1	1 1 1 377	6 15

Job The number of the job protot, we being defined (Job 1 is reserved for the simulated executive. Each line specifies a job step - this field contains the number of the Task Type type of task for the step (see Form 2). Priority A number between 1 and 9, indicating the priority of the step; 9 is the highest priority. Nature A 3 in this field for any job step indicates that the job is cyclic (i.e., it repeats continuously); if the job is not cyclic, a 2 indicates that the step is cyclic; otherwise, a l should appear. The number of a MODLIT variable whose value determines whether or not the Go/NoGo step is to be performed; nonzero = Go, zero = NoGo. Immediate The numbers of other tasks in the job which must directly precede the given step during performance, and which must be completed before the Predecessors

given step during performance, and which must be complete given step can start; there may be no predecessors.

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b. FORM 2 - TASK DEFINITION

Form	Task Type	Service Class	Permissible Delay	Required Elements .
2	nn	n	nnnnnnnn	nnnnn nnnnn (to a maximum of 100)
E.G. 2 2	6 15	5 1	0 100	30007 30021 40055 40030 50020 50008 30008 40030 50010 50011

Task Type

The number of the task prototype being defined (Tasks 1 through 5 are reserved for the simulated executive).

Service Class

1 - critical; perform immediately (Permissible Delay is ignored).

2 - timely; becomes critical following lapse of Permissible Delay.

3 - timely; becomes noncritical following lapse of Permissible Delay.

4 - timely; discard if Permissible Delay elapses.

5 - noncritical (Permissible Delay is ignored).

Permissible Delay

A period in milliseconds commencing with job start (see Service Classes 2 - 4)

Required Elements

Identifiers of routines (see Form 3), data blocks (see Form 4), and messages

(see Form 5) which comprise the task; identifiers are

300nn for a routine type nn 400nn for a data block type nn 500nn for a message type nn

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FORM 3 - ROUTINE DEFINITION

Form	Routine	Share	Library	Size	Execution	Processor	Memory Residence	Comp	utatio	n Time
		Class	Data Set	·	Time	Class	Kesidence	v	X44	x45
3	ŋnn	n	กอกกอก	nnnnnnn	nnnnnnn.	nn onnn		nnn	nn.	nn.
E.G. 3 3	7 21	1 0	110001 366	12000 3200	600 0	1 10	70001 371	16 380	20	

Routine

The number of the routine type being defined (Routine 1 is reserved for the

simulated executive).

Share Class

1 if the routine can be shared among tasks; 0 if not.

Library Data Set

The identifier of the data set which is supposed to contain a loadable form of the routine (See Form 11), or the number of a MODLIT variable which is to be

evaluated when loading occurs, to determine the identifier.

Size

The number of characters of memory space required for the routine.

Execution Time

The maximum amount of time (in milliseconds) that the routine will operate

for a task; zero if no limit.

Processor Class

The level of processor capability required to execute the routine (See Form 9).

Memory Residence

The memory into which copies of the routine can be loaded, or zero if no

restriction;

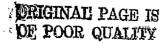
0 - load into any memory, as required for tasks

nnn - evaluate variable nnn to determine memory identifier

700nn - the memory to which the routine is to be loaded

Computation Time

The number of a MODLIT variable to be evaluated whenever a transmission completes for a task, to determine the amount of computing (in milliseconds) to be spent in executing the routine; also, the values assigned to X44 and X45 for possible use as parameters in the given variable (they may be ignored).



d. FORM 5 - MESSAGE DEFINITION

Form	Message	Nature	Source	Sink	Le	engtl	n.	In	terva	1 1	Start Time	Total		Trigger Domain
					V	X44	X45	V	X44	X45			Tilect	
5	nnn	n	nnnnnn	nnnnnn	nnn	nn.	nu.	nnn			nnnnnnn.	nnnn	n	n
E.G. 5 5 5	8 20 31	0 1 0	60003 50050 397	40030 110002 398		200	15	16		0	0 0 100	1 0 0	C 1 0	0 0 1

Message

The number of the message type being defined (Messages 1 through 5 are reserved for the simulated executive).

Nature

- 0 frequency of transmission (see the Interval field) is dependent upon task execution; a separate transmission sequence is established for each task.
- 1 message transmission is shared among tasks and occurs independently of task execution, but transmissions may accumulate.
- 2 message transmission is shared among tasks and occurs independently of task execution, but if a transmission is not started prior to the next transmission due for the message, the transmission is lost.

Source Sink The identifier of a defined unit which is suitable for use as a source or sink, or the number of a MODLIT variable to be evaluated whenever the messsage is to be transmitted, to determine the identifier:

nnn - variable number 60nnn - device (See Form 6)
40nnn - data block (see Form 4) 70nnn - memory (See Form 7)
50nnn - message (used only as a source) 110nnn - data set (See Form 11)

Length

The number of a MODLIT variable to be evaluated whenever the message is to be transmitted, to determine the length (in characters) of the transmission; also, the values assigned to X44 and X45 for possible use as parameters in the given variable (they may be ignored).

Interval

The number of a MODLIT variable to be evaluated whenever a transmission of the message (or triggering message if appropriate) completes, to determine a time interval (in milliseconds). If Source is a message, this is the time between completion of the triggering message and the start of the response; if the Source is not a message, this is the time between successive transmissions of this message. X44 and X45 are used as in the Length field; the Interval field is ignored if Total is I for a nontriggered message.

Start Time

The period (in milliseconds) which must elapse before the message can be transmitted; measured from the start of a task if Nature is 0, or else from the start of the job.

Total

The number of transmissions of the message; 0 if no limit.

Storage Effect

1 if transmissions is to change the size of a source or sink data set by the length of the message; 0 if no effect is wanted.

Trigger Domain

Applies only to messages triggered by other messages; 0 if any transmission of the trigger message is to trigger this message; 1 if only transmissions related to the task are relevant to this message.

e. FORM 6 - DEVICE DESCRIPTION

Form	Device	A/D	Share	Record	Transmis	sion Rate	Reset Period
			Class	Size	Input Output		Letron
6	nnn	n	n	nnnnn	nnnnn.	nnnn.	annn.
E.G. 6 6	1 12	1	0 1	0 800	10 5	10 6	3 1

Device

The number of the device being described.

A/D

l - digital

2 - analog

3 - digital to analog 4 - analog to digital

Share Class

 $\mathbf{0}$ ·· can only be assigned to one task at a time

1 - can be shared among tasks

Record Size

Limits the length of a transmission by truncating it, if necessary, to the number of characters indicated; zero if no limit on record size.

Transmission Rate

The rate (in characters/millisecond) at which data can be received (Input)

or sent (Output) by the device.

Reset Period

The time (in milliseconds) required by the device to recover from a

transmission before it can start another.

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FORM 7 - MEMORY UNIT DESCRIPTION

Form	Memory Unit	Speed Factor	Number of Pages
7	nnn	nnnn.	nnnn
E.G. 7 7	1 2	1 0.25	256 1000

Memory Unit

The number of the memory unit being described.

Speed Factor

The ratio of the memory access rate to a nominal rate of 1 character per microsecond; e.g., "2.5" indicates an access rate of 2.5 characters/microsecond.

Number of Pages

The number of virtual machine pages (see Form 14) which constitute the

capacity of the memory unit.

g. FORM 8 - STORAGE UNIT DESCRIPTION

Form	Storage	A/D	Share	Cycle	Transmission Rate	Capacity		Access	: Perio	od		
	Unit		Class				V	X44	X45	X56	х57	
8	nn	n	n	nna.	nannn.	nnnnnnnn	ոդո	nn.	nn.	nn.	nn.	
E.G. 8 8	1 2	1 1	1 0	0 25	8.2 12.1	1000000 500000	16 388	5 20	5			

Storage Unit

The number of the storage unit being described.

A/D

1 - digital 2 - analog

Share Class

0 - can only be assigned to one task at a time.

1 - can be shared among tasks.

Cycle

A zero indicates that the storage unit is noncyclic; i.e., it is in motion only during transmission operations (e.g., a tape). A nonzero value indicates that the storage unit is cyclic (e.g., a disk or drum) with a period in milliseconds as specified by the value.

Transmission Rate

The rate (in characters/millisecond) at which the storage unit can send or

receive data.

Capacity

The number of characters which the storage unit can accommodate.

Access Period

The number of a MODLIT variable to be evaluated whenever the storage unit is to be accessed, to determine the time (in milliseconds) that is to be spent in locating the data (or place for the data) to be transmitted; also, the values assigned to X44, X45, X56, and X57 for possible use as parameters in the given variable (they may be ignored). Note that X44 must be in milliseconds if Cycle is 0.

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h. FORM 9 - PROCESSOR DESCRIPTION

Form	Processor Unit	Speed Factor	Class	Interrupts	Task Switch Period	Virtual Machine	Connected Memory Units
9	nn nnnn. nn		n	nnnnn	n	nn nn (to a maximum of 20)	
E.G. 9 9	, , , , , , , , , , , , , , , , , , , ,		10 11	5 0	2 4	1 1	1 2 5 1

Processor Unit

The number of the processor being described.

Speed Factor

The ratio of the processor operating speed to a nominal rate of 1 instruction per microsecond; e.g., "1.5" indicates a processing rate of 1500000

instructions per second.

Class

A number used to match routines (see Form 3) with appropriate processors; classes I through 9 have related capabilities such that I is a subset of 2, 2 is a subset of 3, etc. There are no implied capability relations concerning classes 10, 11, etc.

Interrupts

A number which indicates the types of interrupts to which the processor can respond:

0 - none

1 - I/0

4 - job and task initiation requests 5 - all

Task Switch Period The time (in milliseconds) required for the processor to drop one task and commence another, as a consequence of an interruption.

Virtual Machine

The number of the virtual machine (see Form 14) to which the processor belongs.

Connected Memory

Units

The numbers of memory units (see Form 7) which are addressable by the processor; all of the memory units must belong to the same virtual

machine as the processor.

i. FORM 10 - DATA LINK DESCRIPTION

Form	Data Link	Mode	Transmission Rate	Time Lag
10	nnn	n	nnnn.	nnn.
E.G. 10 10	5 306	0 1	10 2	0 0

Data Link

If less than 100, this field contains the number of a half-duplex communication channel. If greater than 100, it signifies a multiplexed set of half-duplex subchannels; the set number is given by the 100's digit, and the number of subchannels in the set is given by the last two digits (e.g., "230" would define a multiplexed channel number 2, consisting of 30 subchannels).

Mode

Applies only to multiplexed data links:

0 - the subchannels are completely independent of each other.

1 - the channel will operate in "burst mode" if any of its subchannels is subjected to a load in excess of the specified transmission rate. This will cause interruption of any other transmissions in progress on the data link, and may result in data loss.

Transmission Rate

The maximum rate (in characters/millisecond) at which the link operates; in the case of a multiplexed channel, it is the rate for each subchannel.

Time Lag

The period (in milliseconds) between sending and receiving one unit of data.



j. FORM 11 - DATA SET DEFINITION

Form	Data Set	Storage	Organization	Initial Size	Maximum Size
11	пn	nn	n	nnnnnnnnn	กกอกกากทากกา
E.G. 11 11	1 66	3 12	0 1	0 10000	1000000 5000000

Data Set

The number of the data set being defined.

Storage

The number of the storage unit (see Form 8) on which the data set resides.

Organization

0 - the data set is serially addressed. 1 - the data set is randomly addressed.

Initial Size

The number of characters in the data set when simulation commences.

Maximum Size

The maximum space (in characters) reserved for the data set on the

specified storage unit.

k. FORM 12 - CONFIGURATION SPECIFICATIONS

Form	Unit	Data Link Connections
12	nnnnn	nnn nnn nnn (to a maximum of 96)
E.G.		
12	60002	1 23 73 202 203
12	70011	200 300
12	80006	56789

Unit

A 5-digit identifier of a memory unit (see Form 7), a storage unit (see Form 8), or a device (see Form 6) which is to be connected to specified data links (e.g., 60002 specifies device 2).

Data Link Connection The numbers of data links (see Form 11) to which the given unit can be connected for message transmission. Independent channels are represented by their respective numbers. A particular subchannel of a multiplexed channel is represented by specifying the set number of the channel as the 100's digit, and the ordinal number of the subchannel in the set as the last two digits (e.g., 209 for the ninth subchannel of set 2); all subchannels of a multiplexed channel are represented by the set number as the 100's digit and 00 for the last two digits.

Any units which do not share some data link can be assumed to share an implicit link for the purpose of message transmission (see Form 13, Algorithm 4B).

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]. FORM 13 - ALGORITHM SELECTION

Form			Algori	Lthm			•								
	1٨	1B	2A	28	2C	20	2E	3A	3B	3C	φA	48	5Λ	5B	6A
E.G. 13	0	0	1	1	0	0	1	1	0	1	0	0	1	1	1

Algorithm 1

Transmission Path Selection:

- $\Lambda = 0$ If all suitable links are in use, choose the first one and wait.
- $\Lambda = 1$ If all suitable links are in use, wait until one becomes available.
- B = 0 Choose the first suitable link which is not in use; if all are in use, see Algorithm 1A.
- B = 1 Choose the first suitable link whether or not it is in use.

Algorithm 2

Memory Allocation:

- $\Lambda = 0$ Element (i.e., routine and data block) consistation is not permitted.
- A = 1 If critical tasks are being considered (See Algorithm 3B), they may confiscate elements or space.
- B = 0 Consolidate space whenever an element is no longer needed.
- B = 1 Consolidate space only when required for loading additional elements.
- C = 0 Elements may coreside in pages.
- C = 1 Each element must start on a new page.
- b = 0 Inhibit space consolidation.
- D = 1 Permit space consolidation.
- E = 0 Consolidate space only to meet a requirement.
- ${\rm E}=1$ Consolidate space in total for a virtual machine whenever a requirement cannot be met for element leading.

Algorithm 3

Task Scheduling:

- $\Lambda = 0$ Processing is not interruptible.
- $\Lambda = 1$ Processing is interrupt. The by the executive and critical tasks.
- B = 0 Task criticality is not considered; i.e., all tasks are treated as noncritical
- B = 1 Critical tasks have precedence and confiscation privileges over non-critical tasks in obtaining processors if interruptions are permitted (See Algorithm 3A).
- C = 0 Scheduling is on a cyclic basis; i.e., tasks are placed in time-ordered queues for execution.
- C = 1 Scheduling is by task priority.

Algorithm 4

Unit Selection:

- A = 0 No special treatment for critical tasks.
- A = I If critical tasks are being considered (See Algorithm 3B), they may confiscate nonsharable devices and storage units,
- B = 0 Choose a virtual machine for a task without regard to explicit data link connections; i.e., implicit links are to be assumed.
- B = 1 Select a virtual muchine for each task which permits all messages associated with the task to be transmitted over explicit data links; i.e., implicit links are not allowed.

Algorithm 5

Element Loading:

- A = 0 Do not use a processor to perform loading service.
- A = 1 Use a processor for loading elements.
- B = 0 Place elements in memory without transmitting loading messages.
- B = 1 Load elements by transmitting from library data sets to memory.

Algorithm 6

I/O Service:

- $\Lambda = 0$ Do not use a processor for I/O initiation or I/O interrupt response.
- A = 1 Use a processor to initiate I/O and to respond to I/O interrupts.

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m. FORM 14 - VIRTUAL MACHINE DEFINITION

Form	Virtual Machine	Executive Memory Unit	Vir'ual Memory	
			Size	Page Size
14	n	nn	nnnnnnnn	nnaaannnn
E.G. 14 14	1 2	1 11	100000 120000	1000 500

Virtual Machine

A number between 1 and 6, indicating the virtual machine being defined.

Executive Memory Unit

The number of the memory unit (see Form 7) in which the simulated executive for the virtual machine (i.e., routine 30001 and data block 40001) will reside. It must be a memory which is connected to a class 10 processor (ee Form 9) for the machine, since that is required for execution of the executive.

Virtual Memory

Size is the total number of addressable characters in the composite of memory units for the virtual machine. Page Size is the number of characters per addressable page of memory.



5.1.3.5 <u>Preparation of a Job Schedule</u>. The Job Schedule provides the means to initiate jobs, add job and task definitions, modify or add system specifications, and specify events through setting of Savex Cells.

The formats for scheduling must conform to the same rules that apply to specification forms. Each initiation is represented by a line of input, of which only the first 70 positions are relevant.

A double prime ('') in positions 1 and 2 or a quotation mark (") in position 1 indicating that the line is a comment, as specified in paragraph 5.1.3.4 - Preparation of Model Specifications, can also be used for the job schedule. All input lines are interpreted on a free-field basis, i.e., one or more spaces separate successive fields.

The Job Schedule is read during simulation and forms should be ordered on the time field (i.e., the first field). No job or event should be scheduled to start before simulated time 20 since a line which begins with a number less than 20 is treated as a specification form. The executive is automatically started and should not have a job initiation in the schedule.

a. JOB INITIATION

Time	Job	Trigger Message	Repeat Flag		
nonda	nn	nn	п		
E.G. 150 160 210	2 3 6	28 12	0 1		

Time

The time (in milliseconds) at which the job is to introduced to the system.

Job

The number of the job (see Form 1) to be initiated.

Trigger Message

If this field is specified, it must contain the number of a message (see Form 5) which must complete transmission after the given time, in order to start the job. If unspecified, the job will be started immediately.

Popeat Flag

Applicable only if a trigger message is specified:

0 - the job is initiated once, following the next completion of the transmission of the specified message.

1 - the job is to be initiated following every occurrence of the specified message transmission.

EVENT OCCURENCE

Time	0	Events			Event K	
		Savex	Increment		Savex	Increment
nnnnn	0	0 nnnn nn			nnnn	nnn
E.G.				32- 1-1-		
1800	0	688	+2	Agency Special Con-		
1950	0	680	1		681	10
1960	0	688	-1		681	1
				4.50		DE SAME A

Time

The time (in milliseconds) at which the indicated events occur. It must be greater

than 19.

Savex

The number of the Savex cell associated with the event.

Increment

The amount by which the Savex cell is to be changed.

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5.1.4 Overall Approach

In coordination with NASA a simulation model version was developed for the Space Shuttle, reflecting the hardware characteristics and the functions to be performed during the Approach and Landing Test (ALT) of the Space Shuttle. Orbiter.

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Hardware parameters were extracted from NASA Computer Program Development Specifications, from IBM Functional and Technical Descriptions, and from Rockwell International Functional Subsystem Requirements documentation. These parameters are discussed in detail in paragraph 5.2.3.

Characteristics relating to the expected performance of software programs, modules, and cyclic executives have been based largely on the ALT Functional Design Specifications by IBM that describe the functions performed during the various major modes of the ALT configuration, the cyclic executive processors and the Specialist functions. Refined timing of the execution phase of each routine was derived by determining the execution time for each set of instructions that operate under certain specified conditions, based on the instruction execution times given in References 26 through 28 and execution times given in Appendix D of Volume 2, Part I (Table D-2), of Reference 19 and Appendix D (Table D-2) of Volume 2, Part 3, of Reference 19.

5.1.4.1 Approach to Hardware Definition. The model consists of the entities listed below.

Certain entities are simulated separately as their characteristics and functions are distinct and logically different even though they are physically constructed as a unit, e.g., the GPCs are logically depict d as consisting of a CPU, a Core Memory, and an IOP.

The number in parentheses indicates the IMSIM specification number as explained in paragraph 5.1.3 and corresponds to the number on the diagram in Figure 2-1.

- a. Four Space Shuttle Advanced System/4Pi Model AP-101 Central Processing Units (90001, 90002, 90003, 90004).
- b. Four GPC/IOP combined Main Memories, containing 65.5K words each (262K bytes each) (70001, 70002, 70003, 70004).
- c. Four Input/Output Processors (IOP) with 24 channels each.
- d. Mass Memory consisting of a tape controller and two Mass Memory tapes, each tape with a capacity of 134 X 10⁶ bits (17,000,000 characters) (80001, 80002).
- e. Four Display Electronic Units (DEU) (60001, 60002, 60003, 60004).
- f. Four Display Units (DU) (60005, 60006, 60007, 60008).
- g. Three Keyboard Entry Units (KB) (60027, 60028, 60029).
- h. Eight Multiplexer/Demultiplexer units (MDM) for flight critical functions (60009, 60010, 60011, 60012, 60013, 60014, 60015, 60016).

()

- i. Three Display Driver Units (DDU) (60017, 60018, 60019).
- j. Two Pulse Code Modulator Master Units (PCMMU) (60095, 60096).
- k. Seven Multiplexer/Demultiplexers (MDM) for forward and aft operational instrumentation (60020, 60021, 60022, 60023, 60024, 60025, 20026).
- Twenty-seven data link buses grouped by function 100001 through 100027).
- m. Eleven half-duplex data links for interdevice communications (100028 through 100038).

Each of the above items is described in detail in paragraph 5.2.3.2.

A diagram of the simulated configuration for ALT is given in Figure 2-1 contained in Section 2.1 of the Summary, and depicts the hook-up of these elements.

5.1.4.2 Approach to Workload Definition. The software requirements for the Space Shuttle Orbiter onboard digital data processing system specify a hierarchical system to be constructed according to established techniques of structured programming. The activity within an individual computer of the DDPS essentially consists of a set of tasks wich may be performed concurrently (i.e., multitasking) and which compete with each other for use of the central processor. The tasks are assigned unique priorities to be used in resolving conflicts over the CPU, and they are scheduled either by time pulses or by the occurrence of specific events. All input/output control is confined to certain "executive" tasks and is handled by input/output processors (IOP), thereby relieving the CPU of these specialized functions.

Definition of an IMSIM workload to represent this activity necessitated:

- a. establishment of specific objectives for simulation,
- b. an understanding of the organization and intercommunication of the software,
- information and assumptions concerning the amount of computing and data transmission performed as a function of the state of the system,
- d. value judgments as to relative significance of functions, events, states, etc., to the simulation objectives, and
 - e. methods to be used for representation of each of the significant aspects of the system.

These five areas of concern were interdependent and had to be treated in parallel; for example, it is impractical to gather detailed information and make assumptions about a software module which is essentially irrelevent to simulation goals. Simulation objectives were tentatively established and are presented in Sections 5.1.1 and 5.1.2. The methods for software representation

are described in Section 5.2.3.3. Since virtually all of the activity within the DDPS is organized into schedulable "processes", these processes are identified, together with the conditions for activating them, and the program modules which are executed for them. The processes are associated with four areas: User Interface, System Control, Guidance Navigation and Control, and Systems Management.

- 5.1.4.2.1 <u>User Interface Processes</u>. Six User Interfaces processes were considered for representation. They are identified by the principal modules as follows:
 - DCI_CYC_DISPLAY Cyclic Display Processing Scheduled for execution at 100 ms intervals.

Other modules called include: DCI#FMT - Data Formatting DCI#CON - Data Conversion

- b. DCS_SYNC GPC/PCMMU Data Cole Synchronizer Scheduled by DDC when a GPC initialized or on user request for synchronization of data cyclos. It enables DCD for call by AIE.
- c. DDC_DWN_LST_CONTROLS Downlist Data Controls Processor Scheduled to execute on an undetermined time interval.
- d. DGI LDB IO Launch Data Bus I/O Processor Scheduled to execute on an undetermined time interval.

Other modules called include:
DLM_LDB_ROUT - LDB Message Router
DMM_MCDS_PROCESS - MCDS Message Processor

e. DMC_SUPER - User Interface Control Supervisor
Performed whenever events indicate MDCS or ICC messages, or an applications service request, or completion of MM I/O service.

Other modules called include:

DMC_FUNCTIONS - Keyboard Functions

DMC_SEQ_REQ_PROC - Sequence Request Processing

DMC_APP_INT - Application Control Interface

DMC_MCDS_CNT - MCDS_Display Control

DMC_NEW_DISPLAY - New Display Processing

DMC_APP_KEY_PROCESS - Application Keys Processing

DIM_ICC_COLLECTOR - ICC Message Collector

f. DMI MCDS IN - MCDS Input Processor Scheduled to execute at 200 ms intervals.

Other modules called include: DMM MCDS PROCESS - MCDS Message Processor

1

- 5.1.4.2.2 <u>System Control Processes</u>. Eleven System Control processes were considered for representation. They are identified by their principal modules as follows:
 - a. AIE_SIP System Software Interface Processor Scheduled to execute at 40 ms intervals on all GPCs for synchronization and ICC.

Other modules called include:
DCD_DOWNLIST - GPC Downlist Formatter
DIM_ICC_COLLECTOR - ICC Message Collector
DME_ICC_ROUT - ICC Message Router
DLA_LIGHT_ALARM_PROC - Lights and Alarm Processing

- b. AIG DEU LOADER DEU Loader Scheduled for execution only during IPL or SM8 to load a DEU.
- c. ARA_GPC_SWITCH GPC Switch Monitor
 Scheduled to execute at 1000 ms intervals to monitor switches and adjust system state.

Other modules called include:
DMS_MSG_LSF - Message Line Support Function
DIM_ICC_COLLECTOR - ICC Message Collector

- d. ASA IDLE_SPEC Idle Specialist Function (SPEC 0-00)
- e. ASB_RD_/WRT Read/Write Specialist Function
- f. ASC_TIME_MGMT Time Management Specialist Function
- g. ASD_DATA_CONTROL Data Control Specialist Function Not invoked during Mated/Drop Test
- h. AIB_GPC_LOCATOR GPC Locator
- i. ARB IDLE OPS Idle Operational Sequence
- j. ARC_GPC_RECONFIG GPC Reconfiguration
- k. ARH_SEC_GPC_RECONFIG Secondary GPC Reconfiguration Not scheduled during Mated/Drop Test
- 5.1.4.2.3 <u>Guidance, Navigation, and Control Processes</u>. Twenty-two GN&C processes were considered for representation. They are identified by their principal modules as follows:
 - a. GAA_OPS2_MATED_DROP_TEST Mated/Drop OPS Control Segment Scheduled via UI to process requests related to GNC OPS 2.

 Other modules called include:
 ARF_DPS_CONFIG_ITEM DPS Configuration Item Processor
 GKR_RM_CONT_KYBD_PROC RM-Control Keyboard Processor

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GAD_MATE_IDLE - Mated/Drop Test Idle Mode
 Scheduled to execute at 40 ms intervals while Mode 200 prevails.

Other modules called include:

GBM_IMU_BYTE - IMU_Byte Processing

GMC_ACP_ACUM - IMU_Accelerometer Accumulation

GMD_RES_PROC - IMU_Resolver Processor

GME_FLT_ATT- IMU_Flight Attitude Processor

GMF_GYO_TORQ - IMU_Gyro_Torquing

GRC_NAVAID_SF - FDI_NAVAID_Selection_Filter

- c. GAV_OPSI_PRE_FLT Preflight OPS Control Segment Scheduled via UI to process requests related to GNC OPS 1. Not invoked during Mated/Drop Test.
- d. GEF_FC_EXEC Fast Cycle Executive Scheduled to execute at 40 ms intervals for Preflight and Mated/ Drop Test Flight Control except during idle modes.

Other modules called include: GCA PTCH CE - FCS Pitch Control GCB RY CE - FCS Roll/Yaw Control GCC BF CE - FCS Body Flap Control GCD_ELVTR AUTO CE - FCS Elevator Auto Control GCE_ELVTR_MD CE - FCS Elevator Man/Dir Control GCF_ELVTR_CAS_CE - FCS Elevator CAS Control GCG_ALRN_AUTO_CE - FCS Aileron Auto Control GCH ALRN MD CE - FCS Aileron Man/Dir Control GCT ALRN CAS CE - FCS Aileron CAS Control GCJ RDR AUTO CE - FCS Rudder Auto Control GCK RDR MD CE - FCS Rudder Man/Dir Control GCL RDR CAS CE - FCS Rudder CAS Control GCM NW CE - FCS Nosewheel Control GCQ SYS CHKOUT - FCS Checkout (from GCR) GCR RECON INIT - FCS Reconfiguration and Initialization GCS_SCHED_GAINS - FCS Schedule Gains - Control Laws GPN DP 1 - FCS Data Processing 1 GPO DP 2 - FCS Data Processing 2 GPP CMDS PROC - FCS Commands Processor

e. GEN_MATE_DROP_EXEC - Mated/Drop Executive Scheduled to execute at 80 ms intervals during active modes of OPS 2.

Other modules called include:

GDA_DED_DISP_PROC - Dedicated Display Processor

GDB_AVVI_AMI_PROC - Dedicated Display AVVI, AMI_Processor

GDE_ADI_PROC - Dedicated Display ADI Processor

GDF_HSI_PROC - Dedicated Display HSI_Processor

```
GDZ DISP PROC - CRT Display Processor
GGA TAEM GUID - TAEM Guidance
GGB AL GUID - Approach/Landing Guidance
GGC P TRAJ - Guidance Pitch Trajectory (from GGB)
GGD TRAJ CAP - Guidance Trajectory Capture (from GGB)
GGE SGS - Guidance Steep Glideslope (from GGB)
GGG FF - Guidance Final Flare (from GGB)
GGH P SYNC - Guidance Pitch Synchronization (from GGB)
GGI R CMD - Guidance Roll Command (from GGB)
GGJ AVG G SP - Guidance Single Precision Average G
GGK USER PARAM - Guidance User Parameters
GMB_IMU_BITE - IMU Bite Processing
GMC ACP ACUM - IMU Accelerometer Accumulator
GMF GYO TORQ - IMU Gyro Torquing
GMH_ACP_COMP - IMU Accelerometer Pulse Compensation
GMK GYO COMP - IMU Gyro Compensation
GML ACP TRSF - IMU Accelerometer Pulse Transform
GMN IMU MODING - IMU Moding
GNA MLS MEAS - Navigation MSBLS Measurement Processing
GNB TACAN MEAS - Navigation TACAN Measurement Processing
GNC BARO ALT - Navigation Baro-Altimeter Measurement Processing
GND RADAR ALT - Navigation Radar-Altimeter Measurement Processing
GNE NAV EXEC - Navigation Executive
GNI DATA SNAP - Navigation Data Saving
GN3 MEAS SCHDLR - Navigation Measurement Scheduler
GN7 NAV FILTER - Navigation Filter
GPA ADTA DATA PROC - ADTA Data Processor
GPC AD CALC - Air-Data Calculations
GPM MSBLS DATA PROC - MSBLS Data Processor
GPR RA DATA PROC - Radar Altimeter Data Processor
GPT TACAN DATA PROC - TACAN Data Processor
GRC NAVAID SF - FDI NAVAID Selection Filter
GRE FIDR - FDI Sequencer
GRF TRANS FIDR - Transducer Sequencer (from GRE)
GRG ACT FDBK FIDR - Actuator Feedback Sequencer (from GRE)
GRH SWT FIDR - Switch Sequencer (from GRE)
GRI RGA FIDR - Rate-Gyro Sequencer (from GRE)
GRJ AA FIDR - Accelerometer Assembly (from GRE)
GRK RA FIDR - Radar Altimeter (from GRE)
GRL IMU FIDR - IMU Sequencer (from GRE)
GRM ADTA FIDR - ADTA Sequencer (from GRE)
GRN TACAN FIDR - TACAN Sequencer (from GRE)
GRO MSBLS FIDR - MSBLS Sequencer (from GRE)
GRP BF FIDR - Body Flap Sequencer (from GRE)
```

f. GEN_TAEM_NAV_CYC - TAEM Navigation Cyclic Executive Scheduled to execute at 2000 ms intervals following platform release request. Other modules called include the Navigation Executive (GNE) and the navigation modules called for GEM, plus

GN2_INFLT_HARDSTAND - Navigation Inflight/Hardstand Update
GN4_COV_RECONFG - Navigation State and Covariance Reconfiguration
GN5_AVG_G_DP - Navigation Double Precision Average G
GN6_COV_PROP - Navigation Covariance Matrix Propagation

g. GEP_PRE_FLT_EXEC - Preflight Executive Scheduled to execute at 80 ms intervals during the preparation mode (101) of OPS 1.

Other modules called include:

GDA DED DISP PROC - Dedicated Display Processor

GDZ DISP PROC - CRT Display Processor

GMN IMU MODING - IMU Moding

GPA ADTA DATA PROC - ADTA Data Processor

GPM MSBLS DATA PROC - MSBLS Data Processor

GPR RA DATA PROC - Radar Altimeter Data Processor

GPT TACAN DATA PROC - TACAN Data Processor

GRE FIDR - FDI Sequencer

plus FDI sequencer modules as for GEM

- h. GET NAV TRANS Navigation Rate/Mode Transition Task Scheduled for execution when the Navigation Transition event occurs.
- i. GMA MIN EXEC Minor Cycle Executive Scheduled to execute at 40 ms intervals during the preparation mode of OPS 1 and during the Mated/Drop Test unless the idle mode is entered while the platform is not released.

Other modules called include:

GMB_IMU_BITE - IMU_Bite Processing

GMC_ACP_ACUM - IMU_Accelerometer Accumulator

GMD_RES_PROC - IMU_Resolver Processor

GMF_GYO_TORQ - IMU_Gyro_Torquing

j. GMG_MAJ_EXEC - IMU Major Cycle Executive Scheduled to execute at 320 ms intervals when specified IMU functions are to be performed.

Other modules called include: GMH_ACP_COMP - IMU Accelerometer Compensation

GMI_T_UPDATE - IMU Transform Update
GMJ_TOR TRSF - IMU Torquing Transform
GMK_GYO_COMP - IMU Gyro Compensation

GML ACP TRSF - IMU Accelerometer Pulse Transform

GMM_LAT_FUNC - IMU Large Angle Torquing GMQ_LSF_FILR - IMU Least Squares Filter

- k. GMS IMU ATT IMU Attitude Determination Scheduled by SPEC GUC to control tilt estimation via GMG. It waits for the function to complete.
 - Other modules called include: GMP_TNB_CL IMU Nav Base-to-Cluster Transform
- I. GMT PFLT CALA IMU Preflight Calibration A GMU HANG CALA - IMU Hangar Calibration A GMV HANG CALB - IMU Hangar Calibration B Any of which is scheduled by SPEC GUC to control cluster positioning via GMG. It waits for the function to complete.
- m. GMX_GC_ALIGN IMU Gyrocompass Alignment Scheduled by SPEC GUC to control gyrocompass alignment via GMG. It waits for the function to complete.
- n. GMY_VEL_TILT IMU Velocity and Tilt Scheduled by SPEC GUC for execution upon completion of GMX.
- o. GTX_DD_CKOUT DD Dedicated Display Checkout Scheduled to execute at 1000 ms intervals by SPEC GUC.
- p. GUA HORIZ SIT Horizontal Situation Control Segment Scheduled by UI upon request for horizontal situation display.
- q. GUB_VERT_SIT Vertical Situation Control Segment Scheduled by UI upon request for vertical situation display.
- r. GUC IMU OPRTNS IMU Operations Control Segment Scheduled by UI upon request for IMU functions.
- s. GUG FCS DD CKOUT FSC/Dedicated Display Checkout Control Segment Scheduled by UI upon request for FCS/Dedicated display checkout.
- t. GUH RM NAV RM-NAV Control Segment Scheduled by UI upon request for RM-NAV functions.
- GUI_RM_CONT RM-CONT Control Segment Scheduled by UI upon request for RM-CONT functions.
 Other modules called include: GKR_RM_CONT_KYBD_PRO - RM-Control Keyboard Processor
- v. GUK NAV TRGT_UPDT NAV/TARGET Update Control Segment Scheduled by UI upon request for NAV/TARGET update.

- 5.1.4.2.4 <u>Systems Management Processes</u>. Eleven SM processes were considered for representation. They are as follows:
 - a. SDA DATA ACQUISITION Data Acquisition Scheduled to execute at 50 ms intervals.
 - b. SDM_PERFORM_MON_CONTROL Performance Monitoring Control Scheduled to execute at 500 ms intervals.

Other modules called include:

SFD_FAULT_DETECT_ANNUN - Fault Detection & Annurgiation

SPP_PRECON_PROCESS - Precondition Processing

SSC_SPECIAL_COMP - Special Computations

SAS_ANALOG_SCALE - Analog Scaling

- c...g. Five Specialist functions which are not invoked during Mated/ Drop Test.
- h. Pretakeoff SCM Specialist Function
- i. Predrop SCM Specialist Function Scheduled by UI upon request for subsystem configuration monitoring. Includes the module: SPM_SUBSYS_CONFIG_MON - Subsystem Configuration Monitoring
- j. SPO_PREFLIGHT_OPS SM Preflight Operational Sequence Scheduled via UI to process requests related to SM OPS1, not invoked during Mated/Drop Test.
- k. SFO_FLIGHT_OPS SM Flight Operational Sequence Scheduled via UI to process requests related to SM OPS 2.

Other modules called include:
SSC_SPECIAL_COMP - Special Computations
SPP_PRECON_PROCESS - Precondition Processing
SAS_ANALOG_SCALE - Analog Scaling
SFD_FAULT_DETEC_ANNUN - Fault Detection & Annunciation
SPM_SUBSYS_CONFIG_MON - Subsystem Configuration Monitoring

5.1.4.2.5 Representation of Processes for Simulation. The DDPS processes listed in the preceding sections have the following common operational characteristics: Each is activated by external stimuli (specific events and/or clock pulses) by assigning a CPU to the process on a priority basis; each is subject to interruption for transfer of its assigned processor to a process of higher priority; each process involves the execution of one or more modules of code which are resident in main memory; and, computation associated with performing a process is a function of the state of the system at the time the process is invoked. These characteristics can all be satisfactorily incorporated in the DDPS model if the processes are represented as IMSIM "tasks".

Each task is assigned to a "service class" and given a working "priority" within the class to create a precedence series which correlates with that of the actual DDPS process priorities. Processes which recur at regular time intervals are designated as "cyclic" tasks. The modules which are executed in performing a process are defined as "routines" and may be included or shared among several tasks by declaring them to be elements of specific tasks. DDPS data transmissions are defined as IMSIM "messages"; these are also declared to be elements of appropriate tasks.

IMSIM has been augmented with logic for the representation of significant DDPS events and the maintenance of a system state vector. These are employed in the definition of "GO-NoGo" functions and "Computation Time" functions. The former are used to control the activation of tasks and the latter are evaluated when a task is activated to determine the amount of computing to be simulated for the represented process. The Computation Time functions are actually associated with routines rather than tasks, and therefore, when a task is activated, the functions for all routines which are elements of the task are evaluated and the results summed.

A detailed description of the represented events and state vector is presented in Section 5.2.4.

5.1.4.3 Approach to Simulated Time-Line Segments (JOBSCHEDULES). The first set of time-line segments, hereafter called jobschedules, was developed for the purpose of exercising the model and taking the model through all phases of flight to exercise all software functions. The set started at simulated time 0 with preflight conditions and continued through Mated Flight, Separation, TAEM, Approach & Landing, and Rollout. The purpose was to determine if any significant problems developed during any of the phases.

A second set of jobschedules was developed based on the fact that the heaviest workload occurs at 16-second intervals, when all cyclic processors, executives, and programs are competing for the CPU. This will occur when the tasks that are cyclic at 40 ms, 50 ms, 80 ms, 100 ms, 200 ms, 320 ms, 500 ms, 1000 ms, and 2000 ms all culminate at 16-second intervals. The purpose was to determine if any significant problems developed during a concentration of functions at a given time.

A third set of jobschedules was developed based on different flight segments during ALT, such as Mated Flight and Separation, Postseparation and TAEM, TAEM and Approach & Landing, and Rollout. The purpose here was to determine if any significant problems developed during flight segments.

A fourth set of jobschedules with four jobs was developed based on the simulation of four different Virtual Machines. The purpose was to determine that operation with four active GPCs did not result in problems not discovered in the previous set of runs.

Events based on manual actions (Specialist Functions) were incorporated in each of these jobschedules and are detailed in paragraph 5.2.5.

All these jobschedules with the simulated Specialist Functions are discussed in detail in Section 5.2.5.

5.2 TASKS PERFORMED

This section discusses the activities performed under each of the six tasks specified in the Statement of Work.

5.2.1 Data System Requirements Definition (S.O.W. 2.1.1)

All documentation received from NASA was analyzed, and a thorough understanding of the functional requirements for the Space Shuttle Orbiter's hardware and software was gained.

In close coordination with NASA a baseline for the simulation model was established, viz., the Approach and Landing Test (ALT) configuration, with Memory Configuration #2 and Downlist format #1 as established in the Computer Program Development Specification, Volume I. The two Major Functions in this configuration were determined to be Guidance, Navigation & Control (GN&C), and System Management (SM). The Operational Sequences for the model were determined to be GN&C Mated/Drop Test Ops and SM Flight Ops.

The requirements that were defined for the functions to be performed in the model constituted a realistic approach for the IMSIM simulation model.

These requirements were subsequently transformed into a form suitable for IMSIM and resulted in the simulation model version described in paragraphs 5.2.3 and 5.2.4 that accurately reflected the defined requirements for the Orbiter in the ALT configuration.

Details of the Hardware and Software configurations is given in paragraph 5.2.3.

5.2.2 Sensitivity Analysis (S.O.W. 2.1.2)

Following the Data System Requirements Definition Task, and prior to establishing a specific simulation configuration and its operational modes, a sensitivity analysis of the proposed Space Shuttle Orbiter Data Processing Subsystem was conducted. The primary sources of information and data used to conduct the sensitivity analysis were References 6, 7, 12, and 14. From a detailed review of the referenced documents five potential data processing bottleneck problem areas were defined. The potential problem areas were identified as:

- a. CPU Utilization
- b. IOP lockout of the CPU
- The GPC/PCMMU interface
- d. CPU synchronization
- e. Multifunction Display processing

The process by which the five potential problem areas were identified was based on a detailed review of the technical tasks to be performed by the DDPS, the characteristics of the hardware and software to be used in performing these technical tasks, and the operational environment (flight phases, operational modes, etc.) within which the tasks would be required.

The final configuration and operational mode of the IMSIM/modeled Orbiter Digital Data Processing Subsystem provided data for only one of the five potential problem areas identified (CPU utilization). However, each potential problem area is discussed in this section to indicate why it was initially identified.

5.2.2.1 <u>CPU Utilization</u>. From a detailed review of the Orbiter DDPS tasks to be performed for various operational modes and the requirement that the CPU be capable of handeling cyclic tasks plus randomly generated special tasks, the question of the CPU's capability to perform all required tasks within an allocated time period was identified as a potential problem area. Following the selection of the ALT configuration with the two major functions of "Guidance, Navigation, and Control" plus "Systems Management" for the IMSIM model, this problem area was selected as the principal problem area to be investigated.

Based upon this decision the IMSIM model described in this report was adapted to investigate the potential CPU utilization problem.

5.2.2.2 <u>IOP Lockout of the CPU</u>. Functional and operating requirements for the IOP define two basic operational modes for IOP-initiated requests for access to main memory. The first is when seven or less requests are stacked in the direct memory access (DMA) queue. For this condition, the IOP accesses main memory during CPU instruction execution by cycle-stealing action. The average time for IOP access to main memory for a single request, for this condition, is 2.5 microseconds.

When there are more than seven IOP requests stacked in the DMA queue, IOP DMA enters a "BURST MODE" of operation. During Burst Mode operation, CPU program execution is stopped and the IOP has exclusive access to main memory. The average main memory access time for each IOP request is 1.4 microsecond for Burst Mode operation. A maximum of 64 consecutive main memory accesses by the IOP are allowed in the Burst Mode. The sixty-fifth consecutive IOP main memory request generates an IOP error condition and an interrupt is sent to the CPU and the Burst Mode is disabled.

There are three types of IOP requests for main memory, these are (1) a request for the next MSC or BCE macroinstruction for program execution, (2) a request for data to be transmitted to Shuttle subsystems, and (3) a request to place data received from Shuttle subsystems into main memory.

The question raised by the above description of the IOP "Burst Mode" is the possibility of limiting CPU access to main memory to a time insufficient to accomplish required processing. This condition could possibly exist if there were repeated sequences of IOP Burst Mode operations.

The IMSIM model established to investigate ALT CPU Utilization was incapable of addressing the potential problem of IOP lockout of the CPU for two reasons. First the ALT configuration does not include major portions of the shuttle orbiter's subsystems. It is the IOP requests to and from main memory for these subsystems that could possibly create the problem. Second, the discrete time unit element of the IMSIM simulation model was one milliscond.

To adequately study the potential IOP lockout problem the simulation would require a time unit resolution of one microsecond.

5.2.2.3 The GPC/PCMMU Interface. The pulse code modulation master unit (PCMMU) is an intermediate data transfer unit between the GPCs and seven operational instrument data subsystems and between the GPCs and the payload data subsystem. Within the total Shuttle Orbiter DDPS, the CPU and the PCMMU are the only devices that can enable multiplexer interface adapter units for the transmission or reception of serial bus data.

Functionally the PCMMU performs the following:

- a. Through internal control, it requests input data from the operational instrumentation and payload data subjects. These data are stored in appropriate PCMMU random access memories.
- b. The PCMMU stores data commanded to it from each GPC into toggle buffers and allows any GPC to access all operational instrumentation and payload data.
- c. The PCMMU outputs formatted (downlisted) data to a network signal processor which is used to control downlink data.

Operational functions conducted between GPCs and a PCMMU are performed asynchronously within a data cycle which is synchronized between the two units. Because there will be different operational functional requirements between the GPCs and the PCMMU for different operational modes, a potential data processing problem could exist for excessive GPC/PCMMU asynchronous operation and/or for malfunctions of the GPC/PCMMU Data cycle synchronization.

Because the ALT Mated/Drop test does not incorporate the GPC/PCMMU Data Cycle Synchronizer Software, this potential problem area was not investigated.

5.2.2.4 <u>CPU Synchronization</u>. The five GPCs in the Space Shuttle Orbiter are interconnected by serial data buses and can be operated as independent or redundant units. A basic operational design philosophy of the Shuttle Orbiter DDPS is to provide a capability whereby the computations of any one CPU may be verified by other CPUs whenever these CPUs constitute a redundant set. The objective of this capability is to ensure fail-operational and fail-safe system performance during critical flight phases.

To achieve this operational capability, CPU synchronization of all GPCs which constitute a redundant set has been assumed. A potential data processing problem area could be created if CPU synchronization for redundant operations is not maintained.

From the functional design specifications of the DDPS it would appear that adequate hardware and software design considerations have been given to the CPU synchronization requirement. Each GPC contains three real-time clock timers and systems management synchronizing software programs have been functionally defined.

While the possibility of nonsynchronization of CPUs for redundant set operation may have been minimized by the system design, the consequences of its occurence warrant its consideration as a potential problem area to be studied by simulation. For this reason it was so identified in the sensitivity analysis.

Because the IMSIM Model configured to study CPU Utilization was constructed on the ground rule that only one active GPC need be simulated (because all other GPCs would have identical loading), the problem of CPU synchronization was not addressed. A specific model should be developed to assess this potential problem area. The present model is not appropriate, as it employs a l millisecond time unit.

5.2.2.5 <u>Multifunction Display Processing</u>. The multifunction CRT display system has been designed to provide the principal flight crew interface for data entry, subsystem monitoring, program selection, and the presenting of alphanumeric and graphic data displays. A variety of fixed-display formats and types of displays are defined by the software system to be used. It would appear that under normal operating conditions for the various flight tests and operational phases this interacting crew/system design is capable of meeting all requirements and does not constitute a data processing problem. However, for abnormal operating conditions a potential data processing problem could be generated if extensive crew/system interaction is required. Operationally, most displays are stored in mass memory and are updated by the GPCs. For a condition where the number and rate of crew requests for displays is very high, the possibility exists that the combination of GPC operational task processing and GPC display processing could create an Orbital Data Processing System problem.

For the ALT, the extent of crew/system interface is not extensive, and for the durations of the tests, the crew would not be generating a large number of display requests. For this reason, the potential problem of multifunction display processing was not addressed.

It was noted in some simulation runs, however, that manual actions, generated within a 25-millisecond time frame, will cause a disrupt in the calling of the servicing function.

5.2.3 <u>Test Design</u> (S.O.W. 2.1.3)

Based on the results of task 1 - Data System Requirements Definition and task 2 - Sensitivity Analsyes, a test design was developed incorporating the findings of the previous studies. The Test Design resulted in:

- a. The model generation, described in detail in paragraph 5.2.3.1.
- b. The model's adaptation and parameterization, described in detail in paragraph 5.2.4.
- c. The job schedule inputs, described in detail in paragraph 5.2.5.
- 5.2.3.1 Model Generation. This section describes the inputs and required formats for building and parameterizing the IMSIM model. Nine "input specification form" categories (Forms 6 through 14), as described in paragraph 5.1.3, are used for defining the hardware configuration. These inputs are described and listed in Section 5.2.3.2 below.

Five input specification form categories (Forms I through 5) are employed in specifying software workload characteristics. These inputs are described and listed in Section 5.2.3.3.

The inputs on these 14 specification forms were assembled for execution in the NASA.SPECS10.DATA and the NASA.SPECS20.DATA files.

A printout of these files is contained in Appendix B.

- 5.2.3.2 <u>Hardware Simulation</u>. The simulated hardware is described in detail by:
 - a. Processors
 - b. Memories
 - c. Mass Memory Storages
 - d. Devices
 - e. Datalinks

得好地说,还是这一个地说,这个人也是不是一个人的,我们是不是一个人的,我们也不是一个人的,我们也不是一个人的,我们也不是一个人的,我们也不是一个人的,也是一个人的,我们

The parameters for the hardware simulation were derived from values extracted from the following references:

- a. Computer Program Development Specification, No. SS-P-0002-110A, Volume 1, Book 1 (Revised), Level A Hardware (Reference 6).
- b. Computer Program Development Specification, No. SS-P-0002-130A, Volume 1, Book 3, Launch Data Bus Software Interface Requirements (Reference 8).
- c. Computer Program Development Specification, No. SS-P-0002-410A-2, ALT Functional Level Requirements, Volume IV, Book 1 (Revised), Guidance, Navigation & Control (Reference 10).
- d. Functional Subsystem Software Requirements System Interface, Volume 6, Parts 1 and 2, Sections 1 through 11, and Appendices A through K, Orbiter 101 (References 12 and 13).
- e. Space Shuttle Advanced System/4 Pi Model AP-101, Central Processor Unit, Technical Description (Reference 15).
- 5.2.3.2.1 <u>Processors</u>. Four processors were simulated, one for each of the four GPC complexes.

Each of the GPC processors for the IBM 4pi/AP101 computer has a command execution time of 1.4 microseconds (processing speed of 714300 instructions per second) and is designated as belonging to Virtual Machine #1. The 4pi/AP101 central pr ssor can respond to the following interrupts:

I/0

Bounds Fault

Service request

There is no task switch time involved.

Two approaches were used. One approach was to simulate the four GPCs as all belonging to one Virtual Machine. One processor was represented as actively servicing all tasks while the other three processors were operating passively in the redundant mode, assuming to process identical tasks with ICC messages interchanging between GPC memories for synchronization. These specifications are contained in a data set NASA.SPECSIO.DATA. Format description is given in paragraph 5.1.3 and in the IMSIM User's Manual (Reference 2).

The scripted inputs for this approach for the processors on IMSIM specification form 9 were as follows:

```
''CENTRAL PROCESSING UNIT (CPU) NO. 1
       SPEED CLASS INTERRUPT SWITCH VIRT MACH CONNECTED MEMORIES
7 1
                                                   1 2 3 4
     I 0.48
               10
                                    n
                                            1
9
1 1
''CENTRAL PROCESSING UNIT (CPU) NO. 2
       SPEED CLASS INTERRUPT SWITCH VIRT MACH CONNECTED MEMORIES
                                                   2 1 3 4
1 1
     2 0.48
               10
                         5
                                    0
                                            1
T T
''CENTRAL PROCESSING UNIT (CPU) NO. 3
        SPEED CLASS INTERRUPT SWITCH VIRT MACH CONNECTED MEMORIES
1 1
                                    0
                                            1
                                                    3 1 2 4
     3 0.48
                10
                          5
1 1
''CENTRAL PROCESSING UNIT (CPU) NO. 4
        SPEED CLASS INTERRUPT SWITCH VIRT MACH CONNECTED MEMORIES
7.1
1 1
                                                    4 1 2 3
                                    0
                                            1
     4 0.48
                10
                          5
1 1
1 1
```

The second approach used was to simulate each of the four processors as belonging to a different Virtual Machine (V.M.). This resulted effectively in each GPC representing a Virtual Machine. All computations were done fourfold and each VM acted independently, except for ICC. The actual output messages for three of the four VMs were suppressed except for the ICC messages, which were transmitted by all four VMs.

These specifications are contained in a data set NASA.SPECS20.DATA. The scripted inputs for this approach for the four processors on IMSIM specification Form 9 were as follows:

```
''CENTRAL PROCESSING UNIT (CPU) NO. 1
       SPEED CLASS INTERRUPT SWITCH VIRT MACH CONNECTED MEMORIES
     1 0.48
                                           1
                                                    1
                10
                          5
                                    0
9
1.1
''CENTRAL PROCESSING UNIT (CPU) NO. 2
                     INTERRUPT SWITCH VIRT MACH CONNECTED MEMORIES
1 1
        SPEED
              CLASS
                                                    2
     2 0.48
                10
                          5
                                    0
                                            2
9
''CENTRAL PROCESSING UNIT (CPU) NO. 3
        SPEED CLASS INTERRUPT SWITCH VIRT MACH CONNECTED MEMORIES
                                                    3
9
     3 0.48
                10
                                            3
1 1
''CENTRAL PROCESSING UNIT (CPU) NO. 4
        SPEED CLASS INTERRUPT SWITCH VIRT MACH CONNECTED MEMORIES
7 T
                10
                          5
                                    0
                                            4
                                                    4
9
     4 0.48
```

5.2.3.2.2 Memories. Four memories were simulated, one for each GPC. The main memory for each IBM/4pi AP-101 computer has a total capacity of 256K bytes. The main memory access rate was simulated at 750 ns (speedfactor of 1.4 bytes/microsec.). The page size in these memories was simulated at 2048 bytes with a total of 125 pages for each memory.

During the ALT Simulation, Memory Configuration #2 was in core permanently and no other Memory Configurations were required.

ALT Memory Configuration #2 was simulated with GN&C Ops #2 and SM Ops #2 as the Ops Overlays. This ALT Memory Configuration #2 was assumed loaded in all four GPCs.

As memory configurations will all be predetermined prior to flight, no problems were expected as to memory capacity and therefore, no division was simulated for the Major Function GN&C overlay and the Major Function System Management overlay, or the Ops overlays. The size of the routines are therefore also immaterial and a nominal value of 1 was used on the specification forms.

The scripted inputs for the core memories on Form 7 were as follows:

* * MEMORY 7 1	GPC 1 SPEED FACTOR 1.4	PAGES 125
" MEMORY " 1" 7 2	GPC 2 SPEED FACTOR I.4	PAGES 125
" MEMORY 7 3	GPC 3 SPEED FACTOR 1.4	PAGES 125
1 MEMORY 1 1 4	GPC 4 SPEED FACTOR 1.4	PAGES 125

5.2.3.2.3 Mass Memory Storages. Two Mass Memory Storages were simulated. Both are identical in their characteristics and are simulated as two tape units, each tape with a 17,000,000 byte capacity (134 X10⁶ bits). Access time to the unit was simulated as Variable 400 & Variable 399 with a minimum of 0.5 seconds and a maximum of 8 seconds for each tape unit. (See paragraph 5.2.4 for details on these random variables.) Transmission rate for each unit was set for 125 bytes/ms.

The scripted inputs for the mass memory storages on Form 8 were as follows: $\cdot \cdot \cdot$

"MASS MEMORY STORAGE (MM) NO. 1 A/D SHARE CYCLE TRX RATE CAPACITY ACCESS PERIOD 399 500 0 0 0 1 0 125 17000000 8 11 ''MASS MEMORY STORAGE (MM) NO. 2 11 SHARE CYCLE TRX RATE ACCESS PERIOD A/D CAPACITY 17000000 399 500 0 0 0 2 1 1 0 125 8 11 1 †

5.2.3.2.4 Devices. The following devices were simulated:

a. Fifteen Multiplexer/Demultiplexers (MDMs) - 60009 through 60016 and 60020 through 60026 - which can be shared among tasks. Maximum record size each can hold was simulated at 1024 bytes.

Input and output rates were simulated at 120 bytes/ms. No reset time required.

The scripted inputs for these units on IMSIM specification Form 6 were as follows:

' 'M	ULTI	PLEXE	R/DEMULI	TIPLEXER (MDM)	FF1		
1.7		A/D	SHARE	RECORD	TRANSMIS	SION RATE	RESET
1 1			CLASS	SIZE	INPUT	OUTPUT	PERIOD
6	9	1	1	1024	120	120	0
11							
''M	ULTI	PLEXE	R/DEMULI	IPLEXER (MDM)	FF2		
1 1		A/D	SHARE	RECORD	TRANSMIS:	SION RATE	RESET
1 1			CLASS	SIZE	INPUT	OUTPUT	PERIOD
6	IJ	1	1	1024	120	120	0
1.1							
''M	ULTI	PLEXE	R/DEMULT	TIPLEXER (MDM)	FF3		
1.1		A/D	SHARE	RECORD	TRANSMIS	SION RATE	RESET
1 7			CLASS	SIZE	INPUT	OUTPUT	PERIOD
6	11	1	1	1024	120	120	0
* *							
' 'M	ULTI	PLEXE	R/DEMULT	TIPLEXER (MDM)	FF4		
1.1		A/D	SHARE	RECORD	TRANSMIS	SION RATE	RESET
1 1			CLASS	SIZE	INPUT	OUTPUT	PERIOD
6	12	1	1	1024	120	120	0
1.1							
' 'M	ULTI	PLEXE	R/DEMULI	TIPLEXER (MDM)	FAI		
1 1		A/D	SHARE	RECORD	TRANSMIS	SION RATE	RESET
7 7			CLASS	SIZE	INPUT	OUTPUT	PERIOD
6	13	1	1	1024	120	120	0

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1 1								
1 1	митлт	PLEXE	к/реміп.	FIPLEXER (MDM)	FA2	<u>)</u>		
t		A/D	SHARE	RECORD			SION RATE	RESET
1 1		,	CLASS	SIZE		INPUT	OUTPUT	PERIOD
6	14	1	1	1024		120	120	0
1 1		_						ū
1 1	MULTI	PLEXE	R/DEMUL	TIPLEXER (MDM)	FAS	3		
1 1		A/D	SHARE	RECORD		TRANSMIS	SION RATE	RESET
1 1	ī		CLASS	SIZE		INPUT	OUTPUT	PERIOD
6	15	1	1	1024		120	120	0
1.1	ŀ							
			R/DEMUL	TIPLEXER (MDM)	FA			
1 1		A/D	SHARE	F.ECORD		TRANSMIS	SION RATE	RESET
1 1			CLASS	SIZE		INPUT	OUTPUT	PERIOD
6	16	1	1	1024		120	120	0
11								
11			-	TIPLEXER (MDM)	OF1			
11		A/D	SHARE	RECORD			SION RATE	RESET
			CLASS	SIZE		INPUT	OUTPUT	PERIOD
6	20	1	1	1024		120	120	0
		שעש זם	י זו זאשרו/ ס	TIPLEXER (MDM)	OF?			
11		A/D	SHARE	RECORD	OFZ	TO AMOMTO	SION RATE	RESET
11	r	עות	CLASS	SIZE		INPUT	OUTPUT	PERIOD
6	21	1	1	1024		120	120	0
11		-	4.	1024		120	120	U
1 1	דיי.יוואי	PLEXE	R /DEMIIT.	TIPLEXER (MDM)	OF3			
F 1		A/D	SHARE	RECORD	015	TRANSMIS	SION RATE	RESET
7 1	,	11, 1	CLASS	SIZE		INPUT	OUTPUT	PERIOD
6	22	1	1	1024		120	120	0
1								
Ţ	MULTI	PLEXE	R/DEMUL	TIPLEXER (MDM)	OF4			
†	•	A/D	SHARE	RECORD		TRANSMIS	SION RATE	RESET
1	ı		CLASS	SIZE		INPUT	OUTPUT	PERIOD
6	23	1	1	1024		120	120	0
1								
•				TIPLEXER (MDM)	OA1	mp 1 1 2 2 1 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7		22 2 22
1		A/D	SHARE	RECORD			SSION RATE	RESET
			CLASS	SIZE		INPUT	OUTPUT	PERIOD
6		1	1	1024		120	120	0
		יסי דס	ים /העשמו	TIPLEXER (MDM)	042			
Ţ		A/D	SHARE	RECORD	UAZ	TDANGMT	SSION RATE	RESET
1		A/D	CLASS	SIZE		INPUT	OUTPUT	PERIOD
б	25	1	1	1024		120	120	0
1			1.	±027		120	120	J
t	'MULTI	PLEXE	R/DEMUL	TIPLEXER (MDM)	QA3			
1		A/D	SHARE	RECORD		TRANSMIS	SSION RATE	RESET
T	ı	• =	CLASS	SIZE		INPUT	OUTPUT	PERIOD
6	26	1	1	1024		120	120	0

b. Four Display Electronic Units (DEUs) - 60001 through 60004 - which can be shared among tasks. Maximum record size each can hold was simulated at 8192 bytes.

Input rate was simulated at 120 bytes/ms and output rate at 62 bytes/ms. No reset time required.

The scripted inputs for these units on IMSIM specification Form 6 were as follows:

' 'D	ISPI	AY EL	ECTRONIC	UNIT NO.	1			
T T		A/D	SHARE	RECORD		TRANSMISS	ION RATE	RESET
11			CLASS	SIZE		INPUT	OUTPUT	PERIOD
6	1	1	1	8192		120	62	0
1 1								
' 'D	ISPI	AY EL	ECTRONIC	UNIT NO.	2			
1 1		A/D	SHARE	RECORD		TRANSMISS	SION RATE	RESET
1.1			CLASS	SIZE		INPUT	OUTPUT	PERIOD
6	2	1	1	8192		120	62	0
1 1								
' 'D	ISPI	AY EL	ECTRONIC	UNIT NO.	3			
1.1		A/D	SHARE	RECORD		TRANSMISS	SION RATE	RESET
1.1			CLASS	SIZE		INPUT	OUTPUT	PERIOD
6	3	1	1	8192		120	62	0
1 1								
''D	ISPI	LAY EL	ECTRONIC	UNIT NO.	4			
1.1		A/D	SHARE	RECORD		TRANSMISS	SION RATE	RESET
1 1			CLASS	SIZE		INPUT	OUTPUT	PERIOD
6	4	1	1	8192		120	62	0
1.5								

c. Four Display Units (DUs) - 60005 through 60008 - which can be shared among tasks. Maximum record size each can hold was simulated at 8192 bytes. Input rate was simulated at 38 bytes/ms. No reset time required.

The scripted inputs for these units on IMSIM specification Form 6 were as follows:

T F							
1 1 D	ISPI	AY UN	IT NO.	1			
1 1		A/D	SHARE	RECORD	TRANSMISS	ION RATE	RESET
11			CLASS	SIZE	INPUT	OUTPUT	PERIOD
6	5	1	1	8192	38	0	0
1.1							
' 'D	ISPI	AY UN	IT NO.	2			
1 1		A/D	SHARE	RECORD	TRANSMISS	ION RATE	RESET
1 1			CLASS	SIZE	INPUT	OUTPUT	PERIOD
6	6	1	1	8192	38	0	0
1 1							

* *

7 T

''D'''''''''''''''''''''''''''''''''''	ISPI 7	LAY UN A/D 1	IT NO. SHARE CLASS 1	3 RECORD SIZE 8192	TRANSMISS INPUT 33	ION RATE OUTPUT O	RESET PERIOD 0
11							
ם' י	ISP)	LAY UN	IT NO.	4			
1 1		A/D	SHAPE	RECORD	TRANSMISS	ION RATE	RESET
7 1			CLASS	SIZE	INJUT	OUTPUT	PERIOD
6	8	1	1	8192	38	0	0
1.1							

d. Three Display Driver Units (DDUs) - 60017 through 60019 - which can be shared among tasks. Maximum record size each can hold was simulated as unlimited and the Input and Output rates were simulated at 120 bytes/ms. No reset time required.

The scripted inputs for these units on IMSIM specification Form 6 were as follows:

1 1 D 1 1 6	ISPL 17	AY DR A/D 1	IVER UNIT SHARE CLASS 1	(DDU) NO. RECORD SIZE O	1	TRANSMIS: INPUT 120	SION RATE OUTPUT 120	RESET PERIOD O
' 'D	ISPL	AY DR	IVER UNIT	(DDU) NO.	2			
1 1		A/D	SHARE	RECORD		TRANSMISS	SION RATE	RESET
1 1		-	CLASS	SIZE		INPUT	OUTPUT	PERIOD
6	18	1	1	0		120	120	0
1 1								_
''D	ISPL	AY DR	IVER UNIT	(DDU) NO.	3			
7 1		A/D	SHARE	RECORD		TRANSMISS	SION RATE	RESET
7 7			CLASS	SIZE		INPUT	OUTPUT	PERIOD
6	19	1	1	0		120	120	0
11								

1 1

e. Three keyboard units (KBUs) - 60027 through 60029 - which can be shared among tasks. No specific record size was simulated. The output rate was simulated at 1 byte/ms with a 1 ms delay.

The scripted inputs for these units on IMSIM specification Form 6 were as follows:

''K	EYBO.	ARD U	NIT (KBU)	NO. I			
1 1		A/D	SHARE	RECORD	TRANSMISS	ION RATE	RESET
1 1		•	CLASS	SIZE	INPUT	OUTPUT	PERIOD
6	27	1	1	0	0	1	1
ŤŤ		_					
i i K	EYBO	ARD U	NIT (KBU)	NO. 2			
9 f		A/D	SHARE	RECORD	TRANSMISS:	ION RATE	RESET
1.1		•	CLASS	SIZE	INPUT	OUTPUT	PERIOD
6	28	1	1	0	0	1	1
t t							
* * K	EYBO	ARD U	NIT (KBU)	NO. 3			
1.1		A/D	SHARE	RECORD	TRANSMISS	ION RATE	RESET
7.7			CLASS	SIZE	INPUT	OUTPUT	PERIOD
6	29	1	1	0	0	1	1
7 7							

f. Two Pulse Code Modulation Master Units (PCMMUs) - 60°095 and 60096 - which can be used by all tasks. The maximum record size for each unit was simulated at 2048 bytes and the Input and Output rates were simulated at 120 bytes/ms. No delay required.

The scripted inputs for these units on IMSIM Specification Form 6 were as follows:

1 1 P 1 1 1 1	ULSE 95	CODE A/D	MODULATION SHARE CLASS 1	MASTER RECORD SIZE 2048	UNIT		MISSION	RATE TPUT 120	RESET PERIOD 0
† † † † † † † † † † † † † † † † † † †	ULSE	CODE A/D	MODULATION SHARE CLASS	MASTER RECORD SIZE	UNIT		MISSION	RATE TPUT	RESET PERIOD
6	96	1	1	2048		120		120	0

5.2.3.2.5 <u>Datalinks</u>. The following datalinks were simulated in the ALT Configuration depicted in Figure 2-1:

a. Five databuses for intercomputer communication ~ ICl through IC5 - (100001 through 100005) with a maximum transmission rate of 1MHz.

The scripted inputs for these datalinks on IMSIM Specification Form 10 were as follows:

```
''INTERCOMPUTER COMMUNICATIONS DATALINK - IC1
11
            MODE
                   TRANSMISSION RATE
                                           TIME LAG
10
             0
                       120
                                             0
1 1
'INTERCOMPUTER COMMUNICATIONS DATALINK - IC2
            MODE
                   TRANSMISSION RATE
                                           TIME LAG
     2
             0
                       120
                                             0
10
''INTERCOMPUTER COMMUNICATIONS DATALINK - IC3
            MODE
                    TKANSMISSION RATE
                                           TIME LAG
10
     3
             0
                       120
                                             0
'INTERCOMPUTER COMMUNICATIONS DATALINK - IC4
11
            MODE
                    TRANSMISSION RATE
                                           TIME LAG
10
             0
                       120
                                             0
11
''INTERCOMPUTER COMMUNICATIONS DATALINK - IC5
1 1
                                           TIME LAG
            MODE
                    TRANSMISSION RATE
10
     5
             0
                       120
                                             0
```

b. Four databuses for Display System communication - DK1 through DK4 - (100006 through 100009) with a maximum transmission rate of 1 MHz.

The scripted inputs for these datalinks on IMSIM Specification Form 10 were as follows:

```
''DISPLAY SYSTEM DATALINK - DK1
1 1
            MODE
                    TRANSMISSION RATE
                                            TIME LAG
                                              0
10
              0
                        120
     6
''DISPLAY SYSTEM DATALINK - DK2
1 1
                    TRANSMISSION RATE
                                            TIME LAG
            MODE
     7
              0
                       120
                                              0
10
1 7
```

```
1 1
''DISPLAY SYSTEM DATALINK - DK3
                   TRANSMISSION RATE
                                          TIME LAG
            MODE
10
             0
                      120
                                             0
''DISPLAY SYSTEM DATALINK - DK4
            MODE
                   TRANSMISSION RATE
                                          TIME LAG
10
     9
             0
                      120
                                             0
11
```

c. Eight databuses for Flight-Critical communication - FC1 through FC8 - (100010 through 100017) with a maximum transmission rate of 1 MHz.

The scripted inputs for these datalinks on IMSIM Specification Form 10 were as follows:

''FLIGHT	CRITICAL MODE	BUS DATALINK - FC1 TRANSMISSION RATE	TIME LAG
10 10	0	120	0
''FLIGHT	CRITICAL MODE	BUS DATALINK - FC2 TRANSMISSION RATE	TIME LAG
10 11	0	120	0
''FLIGHT		BUS DATALINK - FC3 TRANSMISSION RATE	TIME LAG
10 12	0	120	0
''FLIGHT	_	BUS DATALINK - FC4 TRANSMISSION RATE	TIME LAG
10 13	0	120	0
''FLIGHT		BUS DATALINK - FC5 TRANSMISSION RATE	TIME LAG
10 14	0	120	0
''FLIGHT		BUS DATALINK - FC6 TRANSMISSION RATE	TIME LAG
10 15	0	120	0

''FLIGHT CRITICAL BUS DATALINK - FC7 MODE TRANSMISSION RATE TIME LAG 10 16 0 120 0 11 ''FLIGHT CRITICAL BUS DATALINK - FC8 MODE TRANSMISSION RATE TIME LAG 10 17 0 120 0 7 5

d. Two databuses for Mission Critical communication - PL1 through PL2 - (100020 through 100021) with a maximum transmission rate of 1 MHz.

The scripted inputs for these datalinks on IMSIM Specification Form 10 were as follows:

"MISSION CRITICAL DATALINK - PL1 1 1 MODE TRANSMISSION RATE TIME LAG 10 20 0 120 0 ''MISSION CRITICAL DATALINK - PL2 MODE TRANSMISSION RATE TIME LAG 0 10 21 120 0 11

e. Two databuses for Mass Memory communication - MM1 through MM2 - (100018 through 100019) with a maximum transmission rate of 1 MHz.

The scripted inputs for these datalinks on IMSIM Specification Form 10 were as follows:

t t "'MASS MEMORY DATALINK - MM1 MODE TRANSMISSION RATE TIME LAG 10 18 0 120 500 1 1 "MASS MEMORY DATALINK - MM2 1 1 MODE TRANSMISSION RATE TIME LAG 10 19 0 120 500 1 1

f. Two databuses for Ground Interface communication - LB1 through LB2 - (100022 through 100023) with a maximum transmission rate of 1 MHz.

The scripted inputs for these datalinks on IMSIM Specification Form 10 were as follows:

''GROUND INTERFACE DATALINK - LB1 MODE TRANSMISSION RATE TIME LAG 10 22 0 120 0 ''GROUND INTERFACE DATALINK - LB2 MODE TRANSMISSION RATE TIME LAG 23 10 0 120 0 t t

g. Four databuses for PCMMU communication - IP1 through IP4 -(100024 through 100027) with a maximum transmission rate of 1 MHz.

The scripted inputs for these datalinks on IMSIM Specification Form 10 were as follows:

''PCMMU DATALINK - IP1 1 1 MODE TRANSMISSION RATE TIME LAG 10 24 0 120 0 11 ''PCMMU DATALINK - IP2 1 1 MODE TRANSMISSION RATE TIME LAG 10 25 0 120 0 7 7 ''PCMMU DATALINK - IP3 MODE TRANSMISSION RATE TIME LAG 10 26 0 120 0 ''PCMMU DATALINK - IP4 1 1 MODE TRANSMISSION RATE TIME LAG 27 10 0 120 0 1 1

h. Four datalinks for communication between Display Electronic Units and Display Units (100028 through 100031) with a maximum transmission rate of 800 bps. (bits/sec).

The scripted inputs for these datalinks on IMSIM Specification Form 10 were as follows:

11	/deu1 28	DATALINK MODE O	TRANSMISSION	RATE	TIME O	LAG
1.1						
טער'! יי	DEU2	DATALINE MODE	TRANSMISSION	D A ጥፑ	TIME	TAC
10 2	29	0	1	KAID	0	LAG
''DU3	DEU3	DATALINK	ζ			
11			TRANSMISSION	RATE	TIME	LAG
10	30	0	1		0	
''DU4	DEU4	DATALINE	ζ			
11		MODE		RATE	TIME	LAG
10	31	0	1		0	

i. Five datalinks for communication between Display Electronic Units and Keyboard Units (100032 through 100036) with a maximum transmission rate of 800 bps.

The scripted inputs for these datalinks on IMSIM Specification Form 10 were as follows:

1 1	/DEU1 32	DATALINK MODE O	C TRANSMI	SSION 1	RATE	TIME O	LAG
''KBl	/DEU3 33	DATALINK MODE O	C TRANSMI	SSION 1	RATE	TIME O	LAG
1 1	/DEU2 34	DATALINK MODE O	TRANSMI	SSION 1	RATE	TIME O	LAG
1 1	/deu3 35	DATALINK MODE O	K TRANSMI	ssion 1	RATE	TIME O	LAG
1 1	/DEU4 36	DATALINK MODE 0	(TRANSMI	ssion 1	RATE	TIME O	LAG

j. Two datalinks for communication between PCMMU and Instrumentation (100037 through 100038) with a maximum transmission rate of 800 KBps.

The scripted inputs for these datalinks on IMSIM Specification Form 10 were as follows:

TT ''PCM1/INSTRUMENTATION DATALINK MODE TRANSMISSION RATE TIME LAG 10 37 0 100 0 1 1 ''PCM2/INSTRUMENTATION DATALINK 1.1 MODE TRANSMISSION RATE TIME LAG 38 10 0 100 0 1 1

5.2.3.3 Workload Specifications. The activity which is to transpire in the DDPS model should reflect every significant activity of the DDPS itself. The IMSIM workload specification forms enable the model designer to maintain a close correlation between elements of the model workload and the actual DDPS workload. The DDPS processor, modules, and data transmissions are defined as tasks, routines, and messages for the model. Static characteristics for each of these system constituents are generally coded directly in the specification forms; however, the dynamic characteristics (those which change as a function of time or system state) are coded as "variables" as described in Sections 5.2.4.2 and 5.2.4.3, and only cross-references to the appropriate variables are included in the specification forms.

All coding for the specification forms is numeric, although comments are associated with each form to describe it for the reader. The following general conventions should be noted:

- a. The form number appears as the first field of the form (1 job step,
 2 task, 3 routine, 5 message, 11 data set)
- b. An * at the end of a form line indicates that the form is continued on the next line
- c. The second field of a form identifies the member of the class defined by the form.

5.2.3.3.1 <u>Job Definition</u>. For the purpose of IMSIM representation of the DDPS workload, the entire activity within a GPC may be treated as a single job, consisting of a set of independently scheduled tasks. Since IMSIM permits the same type of task to be invoked for more than one job, task characteristics are divided into two classes: those which pertain to the type of task, and those which relate to the occasion in which the task appears as a step of a job. The latter are included in IMSIM Form I which is discussed in this section.

The DPPS job consists of 20 independent job steps, corresponding to the 20 types of tasks defined in Section 5.2.3.3.2. Each step is assigned a priority, which is subordinate to the task "service class". All of the steps are defined to be cyclic, even though some do not represent inherently cyclic processes; this is done to permit rescheduling of such steps according to events by IMSIM.

A Go/Nogo condition is specified for each step, to indicate the conditions under which it is to commence an execution cycle. The condition is coded as the number of a "variable" which is defined in Section 5.2.4; in general, each condition is a test of an indicator which is manipulated via logic described in Section 5.2.4.1. The step is held inactive while the condition variable is zero, and becomes active when the variable assumes a positive, nonzero value.

In the approach with four Virtual Machines a different job with identical job steps was assigned to each of the four GPCs. Output messages to MDMs were suppressed for jobs 3, 4, and 5, as only the active computer actually transmits these messages.

a. The scripted inputs for the jobs in Approach #1 with one VM (NASA.SPECS10. DATA) on IMSIM Specification Form 1 were as follows:

	OBS					
† †	JOB	TASK		RITY	NATURE	GO/NOGO
11		GEF	RELATIVE	ABSOLUTE	(CYCLIC)	VARIABLE
1	2	6	8	28	2	401
11		AIE	Ū	29	2	401
1	2	7	9		2	402
1 1		GAD		26		
1	2	8	6		2	403
11		GMA	_	27	_	• • •
1	2	9 GEM	7	24	2	404
1	2	10	4	24	2	405
11	-	SDA	7	25	2	405
1	2	11	5		2	420
1 1		SDM		õ		
1	2	12	5		2	421
11		SFO	_	25	_	
1	2	13 SPM	5	25	2	422
1	2	5FM 14	5	25	2	423
11	4-	GEN	,	7	2	423
1	2	15	7	•	2	406
1 1		GMG		6		
1	2	19	6		2	408
11	_	GMS	_	1	_	
1	2	20	1	2	2	409
1	2	GMT,GMU,GM 21	.v 3	3	2	410
P 7	-	GMX	ر	2	2	410
1	2	22	2	-	2	411
1.1		GMY		5		
1	2	23	5		2	412
1 1	_	GTX	_	4	_	
1	2	24	4	0.5	2	413
1	2	DMI 32	5	25	2	414
11	Z	DMC	3	23	4	414
1	2	34	3	23	2	416
1 7	-	DCI	-	21	-	
1	2	35	1		2	417

1 1	JOB	TASK	PRIORITY	NATURE	GO/NOGO
1.1			RELATIVE ABSOLUTE	(CYCLIC)	VARIABLE
1 1					
1 1		ARA	9		
.1	2	37	9	2	418

The scripted inputs for the four jobs in Approach #2 (four active Virtual Machines) on IMSIM Specification Form 1 were as follows:

1 1	JOB	TASK		RITY ABSOLUTE	NATURE (CYCLIC)	GO/NOGO VARIABLE
1 1		GEF		28	•	
1	2	6	8		2	401
1 1		AIE		29		
1	2	7	9		2	402
11		GAD		26		
1	2	8	6		2	403
t r		GMA		27		
1	2	9	7		2	404
1.1		GEM		24		
1	2	10	4		2	405
1.1		SDA		25		
1	2	11	5		2	420
1!		SDM		5		
1	2	12	5		2	421
11	_	SFO		25		
1 1	2	13	5		2	422
		SPM		25		
1	2	14	5		2	423
	_	GEN		7		
1	2	15	7		2	406
		GMG	_	6		
1 11	2	19	6	_	2	408
	•	GMS		1	_	
1	2	20	1	•	2	409
	2	GMT,GMU,GM		3		
1	2	21	3	•	2	410
1	2	GMX 22	2	2	0	
11	۷	GMY	2	5	2	411
1	2	23	5	J	2	/10
11	2	GTX	,	4	2	412
1	2	24	4	4	2	413
11		DMI	7	25	2	413
1	2	32	5	43	2	414
_	-	74	ر		۷.	414

11	JOB		PRIOF RELATIVE	ABSCUUTE	NATURE (CYCLIC)	GO/NOGO VARIABLE
11		DMC	_	23	•	
. 1	2	34	3		2	416
11	_	DCI		21	2	417
1	2	35	1	9	2	417
	•	ARA	9	9	2	418
1	2	37	9		4	410
1.1		GEF		28		
1	3	106	8	20	2	401
11	ر	AIE	O	29	2	401
1	3	107	9	2,7	2	402
11	,	GAD	,	26	-	
1	3	8	6	20	2	403
i t	,	GMA	Ū	27	-	.00
1	3	9	7		2	404
11	,	GEM	•	24		
1	3	10	4		2	405
11		SDA	7	25	_	
1	3	111	5		2	420
11		SDM	_	5	_	
1	. 3	12	5	_	2	421
11		SFO	-	25		
1	. 3	13	5	<u>-</u>	2	422
1 7		SPM	_	25		
1	. 3	14	5		2	423
1 1		GEN	_	7		
1	. 3	15	7		2	406
7 7		GMG		6		
1	. 3	19	6		2	408
1 1	•	GMS		1		
1	. 3	20	1		2	409
1 1	,	GMT,GMU,G	MV	3		
1		21	3		2	410
1 1		GMX		2		
1	. 3	22	2		2	411
1 1		GMY		5		
1		23	5		2	412
1 1		GTX		4		
1		24	4		2	413
1 1		DMI		25		
1		32	5		2	414
1 1		DMC	4	23		416
1		134	3	•	2	416
11		DCI	•	21	0	1.17
]		135	1	•	2	417
7 1		ARA	_	9	٠	O r A
1	L 3	37	9		2	418

11	JOB	TASK	PRIOF RELATIVE	RITY	NATURE (CYCLIC)	GO/NOGO VARIABLE
11		GEF	KELHIIVE	28	(CICTIC)	AWINDIN
1	4	106	8		2	401
1.1		AIE		29		
1	4	107	9		2	402
1	4	GAD 8	6	26	2	402
11	4	GMA	U	27	2	403
1	4	9	7		2	404
11		GEM		24		
1	4	10	4	0.5	2	405
1	4	SDA 111	5	25	2	420
11	7	SDM	ر.	5	2	420
1	4	12	5	_	2	421
11		SFO		25		
1	4	13	5	0.5	2	422
1	4	SPM 14	5	25	2	423
11	7	GEN	,	7	2	423
1	4	15	7		2	406
11	_	GMG	_	6		
1	4	19 GMS	6	1	2	408
1	4	20	1	1	2	40 9
1 1	•	GMT,GMU,G		3	4	403
1	4	21	3		2	410
11		GMX		2	_	
1	4	22 GMY	2	5	2	411
1	4	23	5	J	2	412
1.7	•	GTX	_	4	-	714
1	4	24	4		2	413
11	,	DMI	_	2 5	_	
1	4	32 DMC	5	23	2	414
1	4	134	3	23	2	416
1.1	•	DCI	J	21	-	1.20
1	4	135	I		2	417
1		ARA	0	9		/10
1 1	4	37	9		2	418
1 1		GEF		28		
1	5	106	8		2	401
11	_	AIE	_	29	_	
1	5	107 GAD	9	26	2	402
1	5	6AD 8	6	20	2	403
-	-	U	3		2	705

11	JOB	TASK	PRIO	RITY ABSOLUTE	NATURE (CYCLIC)	GO/NOGO VARIABLE
7 1		GMA		27	•	
1	5	9	7		2	404
11	_	GEM	•	24		
1	5	10	4		2	405
1 1	_	SDA	•	25		
1	5	i11	5		2	420
1 1	_	SDM		5		
1	5	12	5		2	421
1 1	-	SFO		25		
1	5	13	5		2	422
1 1		SPM		25		
1	5	14	5		2	423
1.1		GEN		7		
1	5	15	7		2	406
t t		GMG		5		
1	5	19	6		2	408
7 1		GMS		1		
1	5	20	1		2	409
1 1		GMT,GMU,GN		3		
1	5	21	3		2	410
1.3		GMX		2		
1	5	22	2		2	411
1.1		GMY		5		
1	5	23	5		2	412
1 1		GTX		4		
1	5	24	4		2	413
1 1		DMI		25		
1	5	32	5		2	414
1.1		DMC		23	_	
1	5	134	3		2	416
1.7		DCI		21		
1	5	135	1	_	2	417
1.1		ARA	_	9	•	,
1	5	37	9		2	418
1 1						

5.2.3.3.2 Tasks. Each of the 20 scheduled processes of the DDPS which are relevant to the Mated/Drop Test was defined as an IMSIM task through use of the Form 2. The tasks were referenced in the definition of the DDPS job as described in the preceding section. Each task was assigned to one of two "service classes"; class I tasks obtain absolute priorities in the range 20-29, while class 5 tasks obtain absolute priorities of 0-9. The "delay" field indicated for Form 2 is not relevant to class I or 5 tasks, but must be filled in as a place-keeper (0 was used).

The process modules which are executed in a GPC are defined as "routines" as described in Section 5.2.3.3.3. Each module is called for execution in one or more processes, and the analog in the DDPS model is listing of routines as "Required Elements" of a task. The 5-digit numbers listed for each task (see the Form 2 table below) indicate the type of element and the individual of that type to be included for execution of the task. If the first digit is 3, the remaining digits identify a routine; if it is 5, the remaining digits identify a message (see Section 5.2.3.3.4).

Note that the amount of computation involved in performing a process was not directly associated with the task which represents the process, but rather with the routines which were employed for the task.

The tasks numbered 100 and higher were used for the simulation with four Virtual Machines.

The scripted inputs for the tasks on IMSIM Specification Form 2 were as follows:

11(GEF FC	EXEC F	AST CYCLE	EXECUTIV	E					
			MS INTERVA			7) AND	GAA (20	016)		
1.1		CLASS	DELAY		ED ELEM	-	•	•		
2	6	I	0	30087	30301		50007	50008	50009	*
				50010		50012	50013	50014	50015	*
				50016	50017	50018	50019	50020	50021	*
				50022	50023	50024	50025	50026	50027	*
				50050	50051	50052	50053	50054	1	
2	106	1	0	30087	30301	1				
1 1										
11/	AIE SIE	SYSTE	M SOFTWARE	INTERFA	CE PROC	ESSOR				
7.1	SCHEDUL	ED AT 40	MS INTERVA	LS BY SY	STEM IN	ITIALIZ	ATION			
1 1		CLASS	DELAY	REQUIR	ED ELEM	ENTS				
2	7	1	0	30116	30130	30138	30147	50028		×
				50058	30151	30140	1			
2	107	1	0	30116	30130	30138	30147	30151	30140	*
				50028	1					
1 1										
'''	GAD_MAT	re_idle	MATED/DRO	P TEST I	DLE MOD	E - 200	}			
11	SCHEDUI	LED AT 40	MS INTERVA	LS BY GA	A (2001	6) UNTI	L MODE	TRANSIT	ION	
1 1		CLASS	DELAY	REQUIR	ED ELEM	ENTS				
2	8	1	0	30302	30303	30045	30089	1		
1.1										

```
''GMA MIN EXEC
                MINOR CYCLE EXECUTIVE
''SCHEDULED AT 40MS INTERVALS BY GAV (20017). IF MODE 200 IS
''ENTERED WHILE PLATFORM IS NOT RELEASED, GMA IS CANCELLED AND THEN
''RESCHEDULED AT MODE TRANSITION.
         CLASS
                  DELAY
                            REQUIRED ELEMENTS
                            30042 30303 30045 1
           1
                    0
11
''GEM MATE DROP EXEC
                     MATED/DROP EXECUTIVE
''SCHEDULED AT 80MS INTERVALS BY GAA (20016) FOR MODE 201. IF MODE
''200 IS ENTERED, GEM IS CANCELLED.
         CLASS
                  DELAY
                            REQUIRED ELEMENTS
2 10
                            30304 30303 30305 30306 30089 30087 *
           1
                    0
                            30307 30312 30031 30315 1
11
''SDA DATA ACQUISITION
                       SM DATA ACQUISITION
''SCHEDULED AT 50MS INTERVALS BY SM OPS 1
         CLASS
                  DELAY
                            REQUIRED ELEMENTS
2 11
            1
                    0
                            30155 50032 50033 1
2 111
           1
                    0
                            30155 1
''SDM PERFORM MON CONTROL
                           SM PERFORMANCE MONITORING CONTROL
''SCHEDULED AT 500MS INTERVALS BY SM OPS 1
         CLASS
                  DELAY
                            REQUIRED ELEMENTS
2 12
            5
                    0
                            30316 30317 1
'' SFO FLIGHT OPS SM FLIGHT OPERATIONAL SEQUENCE (OPS 2)
''SCHEDULED BY UI SOFTWARE (20034)
         CLASS
                  DELAY
                            REQUIRED ELEMENTS
2 13
            1
                    0
                            30157 30316 1
''SPM SUBSYS CONFIG MON SM SUBSYSTEM CONFIGURATION MONITORING
''PRETAKEOFF & PREDROP SM SPECS SCHEDULED BY UI SOFTWARE (20034)
         CLASS
                  DELAY
                            REQUIRED ELEMENTS
2
                            30157 1
   14
            1
                    0
''GEN TAEM NAV CYC
                    TAEM NAVIGATION CYCLIC EXECUTIVE
''SCHEDULED AT 2000MS INTERVALS BY SPEC GUC (20027) UPON PLATFORM
''RELEASE REQUEST
1 1
         CLASS
                            REQUIRED ELEMENTS
                  DELAY
2
   15
                            30306 30308 1
                IMU MAJOR CYCLE EXECUTIVE
''GMG MAJ EXEC
''SCHEDULED AT 320MS INTERVALS BY GMU/GMT/GMV (20021), GMX (20022),
''GMY (20023), AND GMS (20020), ALL OF WHICH ARE SCHEDULED BY
''SPEC GUC (20027).
T 1
                            REQUIRED ELEMENTS
         CLASS
                  DELAY
                            30209 30305 1
2 19
           5
                    0
```

```
''GMS IMU ATT
              IMU ATTITUDE DETERMINATION
''SCHEDULED BY GUC (20027)
         CLASS
                   DELAY
                             REQUIRED ELEMENTS
2
   20
            5
                     0
                             30310 1
''GMT PFLT CALA
                 IMU PREFLIGHT CALIBRATION A
''GMU HANG CALA
                 IMU HANGAR CALIBRATION
''GMV HANG CALB
                 IMU HANGAR CALIBRATION
''SCHEDULED BY GUC (20027)
1 1
          CLASS
                   DELAY
                             REQUIRED ELEMENTS
2
   21
            5
                     0
                             30311 1
T 1
''GMX GC ALIGN
                IMU GYROCOMPASS ALIGNMENT
''SCHEDULED BY GUC (20027)
         CLASS
                  DELAY
                             REQUIRED ELEMENTS
2
   22
            5
                     0
                             30062 1
''GMY VEL TILT
                IMU VELOCITY AND TILT
''SCHEDULED BY GUC (20027) TO FOLLOW GMX (20022)
1.1
          CLASS
                   DELAY
                             REQUIRED ELEMENTS
2
   23
            5
                     0
                             30063 1
''GTX DD CKOUT
                FCS/DD DEDICATED DISPLAY CHECKOUT
''SCHEDULED BY GUG (20028)
                  DELAY
          CLASS
                             REQUIRED ELEMENTS
2
   24
            5
                     0
                             30113 I
''DMI MCDS IN
              MCDS INPUT PROCESSOR
''SCHEDULED AT 200MS INTERVALS BY SYSTEM INITIALIZATION
          CLASS
                   DELAY
                             REQUIRED ELEMENTS
2
   32
            1
                     0
                             30148 30149 1
SUPER
            USER INTERFACE
 SCHEDULED BY SYSTEM INITIALIZATION
         CLASS
                  DELAY
                             REQUIRED ELEMENTS
2
   34
            1
                     0
                             30313 50059 50060 1
2 134
                             30313 1
            1
                     0
''DCI CYC DISPLAY
                   CYCLIC DISPLAY PROCESSING
'SCHEDULED AT 100MS INTERVALS BY SYSTEM INITIALIZATION
1 1
         CLASS
                   DELAY
                             REQUIRED ELEMENTS
2 35
            1
                             30314 50055 50056 50057 1
                     0
2 135
            1
                     0
                             30314 1
''ARA GPC SWITCH
                   GPC SWITCH MONITOR
''SCHEDULED AT 1000MS INTERVALS BY SYSTEM INITIALIZATION
7 7
         CLASS
                  DELAY
                             REQUIRED ELEMENTS
2
           5
   37
                             30118 1
                     0
```

5.2.3.3.3 Routines. The program modules which are called for DDPS processes are represented as IMSIM "routines". An IMSIM Form 3 is used to define each routine. As a practical consideration, a one-one correspondence between routines and modules was not maintained; instead, modules which are collectively employed for a process are grouped together and treated as a single routine. The conditions under which individual modules are exercised and to what extent they perform computation is represented by segments of the "Computation Time" function associated with each routine. These functions are defined and discussed in Section 5.2.4.2.

For each Form 3 listed below, comments are included to indicate which modules were represented by the routine. If the routine is to be used for more than one task, the "Share" code must be 1; otherwise its value is irrelevant.

A number of fields of Form 3 are not significant to simulation of the DDPS but must be filled with acceptable values for proper operation of IMSIM. Thus, a "Library Data Set" is specified for reading of routines from some external source in case they are not resident in memory (which they are); "Size" for each routine is given although analysis of memory loading is not being conducted and the values are therefore only set to a nominal value of 1; the "Time" field indicates an optional cutoff of computation and 0 indicates that no cutoff is desired; since there is only one class of processor being simulated (the CPU) it is nominally defined as a class 10; finally since there is only a single memory unit for each GPC, and one GPC was being simulated as the active transmitting computer for each Virtual Machine while the other three were simulated as redundant, the memory is designed as a variable function of the job being executed.

The scripted inputs for these routines on IMSIM Specification Form 3 were as follows:

```
''TAEM GUIDANCE
                  (TASK 10)
     GGA TAEM GUID
1 1
       SHARE LIB.DS
                          SIZE
                                     TIME PROCSR MEMORY
                                                            COMP.TIME
                                                             359 0
3
         1
              110001
                            1
                                              10
                                                      442
   31
''IMU MINOR CYCLE EXECUTIVE
                               (TASK 9)
     GMA MIN EXEC
       SHARE LIB.DS
                          SIZE
                                     TIME
                                            PROCSR MEMORY
                                                            COMP.TIME
              110001
                            1
                                             10
                                                      442
                                                             355 0
3
   42
         1
''IMU RESOLVER PROCESSOR
                            (TASKS 8, 9)
     GMD RES PROC
1 1
                                            PROCSR MEMORY COMP.TIME
       SHARE LIB.DS
                                     TIME
                          SIZE
              110001
                                                      442
                                                             356 0
3
   45
         1
                            1
                                       0
                                             10
''IMU GYRO-COMPASS ALIGNMENT
                                (TASK 22)
1 1
     GMX GC ALIGN
       SHARE LIB.DS
                          SIZE
                                     TIME
                                            PROCSR MEMORY
                                                            COMP.TIME
                                                               16 0.4
         1
              110001
                            1
                                       0
                                             10
                                                      442
3
   62
```

1.1								
1 1 I	MU VI	ELOCIT	Y TILT	(TASK 23)				
1 1	GM.	Y_VEL_	TILT					
1 1			LIB.DS					COMP.TIME
3	63	1	110001	1	0	10	442	397 0.26
11								
				ILTER (TASK	S 6, 10)		
11		A_FCS_		0.T.O.D.	m Ta es	DDOGED	1 CONTRACTOR I	down with
11				SIZE			MEMORY 442	
3	87	Ţ	110001	1	0	10	442	10 0.200
	ZDT M	ለ የፖለ ፐ ፓን	ድመ ኮ ሮሞፕሊየ	N FILTER (1	יאכעכ פ	10)		
11		C NAVA		A PILLER (I	. AUKU U,	10)		
1 1			LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP.TIME
3			110001		0	10	442	
11		_						
'']	DD DE	DICATE	D DISPLA	Y CHECKOUT	(TASK 2	4)		
1 1		X_DD_C						
1 1				SIZE	TIME	· ·		COMP.TIME
	113	1	110001	1	0	10	442	16 0.4
11								
11			RFACE PRO	OCESSOR (TA	ASK /)			
11		E_SIP	TTD DO	CTTT	TIME	DDOGGD	MEMORY	COMP.TIME
			110001	SIZE 800	1 77.15	10	442	
11	TTO	U	110001	800	U	10	772	10 0:030
116	apa s	WTTCH	MONTTOR	(TASK 37)				
11			SWITCH	(
1 1				SIZE	TIME	PROCSR	MEMORY	COMP.TIME
3	118	0	110001	1.300	IJ	10	442	16 0.214
1 7								
				TER (TASK)	7)			
11		D_DOM						
11				SIZE	TIME			
3	130	0	110001	2000	0	10	442	16 0.24
	TOO 3	aree ve	e correce	OR (TASK 7	1			
11			COLLECTO		,			
7 2			_COLLECTO	SIZE	TIME	PROCSR	MEMORY	COMP.TIME
3	138	1	110001		0	10	442	
11		-		J . C	•			
1 1	LIGHT	rs and	ALARM PR	OCESSING (TASK 7)			
1 1			HT_ALARM		•			
1 1		SHARE		SIZE	TIME	PROCSR	MEMORY	COMP.TIME
	140	I	110001	1600	0	10	442	430 0.24 10
11				.				
1 1			E ROUTER	(TASK 7)				
11	DI	Œ_ICC		ė Toro	m Tarr	BDOGGE	MENODE	com min
	147		LIB.DS 110001	SIZE 1260	TIME O	PROCSR 10		
11		T	110001	1200	U	10	442	16 0.087

```
''MCDS INPUT PROCESSOR (TASK 32)
     DMI MCDS IN
       SHARE LIB.DS
                         SIZE
                                     TIME PROCSR MEMORY COMP.TIME
3 148
         0
              110001
                          400
                                       0
                                              10
                                                      442
                                                            16 0.18
1 7
''MCDS MESSAGE PROCESSOR (TASKS 32, 33)
     DMM MCDS PROCESS
1 1
       SHARE LIB.US
                          SIZE
                                     TIME
                                           PROCSR MEMORY
                                                            COMP.TIME
  149
        1
              110001
                          2200
                                       0
                                             10
                                                      442
                                                            432
1 1
''FAULT MESSAGE SCAN
                        (TASK 7)
     DMS FMS
       SHARE LIB.DS
                                     TIME
                                           PROCSR MEMORY COMP.TIME
                          SIZE
3 151
       1
              110001
                           480
                                       0
                                              10
                                                      442 429 0.216 10
1 1
''SYSTEMS MANAGEMENT DATA ACQUISITION (TASK 11)
     SDA DATA ACQUISITION
F 3
       SHARE LIB.DS
                          SIZE
                                     TIME
                                          PROCSR MEMORY
                                                            COMP.TIME
3 155
         1
              110001
                             1
                                       0
                                              10
                                                      442
                                                             386
1 1
''SUBSYSTEM CONFIGURATION MONITORING (TASKS 13, 14)
     SPM SUBSYS CONFIG MON
       SHARE LIB.DS
                          SIZE
                                     I IME
                                           PROCSR MEMORY COMP.TIME
3 157
       1
              110001
                                       0
                                              10
                                                      442
                                                             16 0.0456
                             1
. .
''FLIGHT CONTROL
                    (TASK 6)
     GEF FC EXEC
                            FAST CYCLE EXECUTIVE
2 1
     GPN DP 1
                            DATA PROCESSING 1
1 1
     GPO DP 2
                            DATA PROCESSING 2
1 1
     GPP CMDS PROC
                            COMMANDS PROCESSOR
1 1
     GRB SWITCH SF
                            FDI SWITCH SELECTION FILTER
1 1
     GCA PTCH CE
                            PITCH CONTROL ELEMENT
1 1
     GCB RY CE
                            ROLL/YAW CONTROL ELEMENT
. .
     GCC BF CE
                            BODY FLAP CONTROL ELEMENT
. .
     GCD_ELVTR_AUTO_CE
                            ELEVATOR AUTO CONTROL ELEMENT
. .
     GCE ELVTR MD CE
                            ELEVATOR MAN-DIR CONTROL ELEMENT
1 1
     GCF ELVTR CAS CE
                            ELEVATOR CAS CONTROL ELEMENT
. .
     GCG ALRN AUTO CE
                            AILERON AUTO CONTROL ELEMENT
1 1
     GCH ALRN MD CE
                            AILERON MAN-DIR CONTROL ELEMENT
1 1
     GCI ALRN CAS CE
                            AILERON CAS CONTROL ELEMENT
1 1
     GCJ RDR AUTO CE
                            RUDDER AUTO CONTROL ELEMENT
1 1
     GCK_RDR_MD_CE
                            RUDDER MAN-DIR CONTROL ELEMENT
1 1
     GCL RDR CAS CE
                            RUDDER CAS CONTROL ELEMENT
7 1
     GCM NW CE
                            NOSEWHEEL CONTROL ELEMENT
1.1
     GCQ SYS CHKOUT
                            CHECKOUT
t t
     GCR RECON INIT
                            RECONFIGURATION & INITIALIZATION
     GCS SCHED GAINS
                            SCHEDULE GAINS - CONTROL LAWS
       SHARE LIB.DS
                                     TIME PROCSR MEMORY
                          SIZE
                                                            COMP.TIME
  301 0
              110001
                            1
                                       0
                                             10
                                                      442
                                                             350 0
```

```
''MATED/DROP CONTROL
                         (TASK 8)
     GAA OPS2 MATED_DROP TST OPS CONTROL SEGMENT
     GAA_OISE_IDLE
1.1
                                 IDLE PROCESSOR
1 1
                                IMU FLIGHT ATTITUDE PROCESSOR
1 1
       SHARE LIB.DS
                           SIZE
                                       TIME PROCSR MEMORY COMP.TIME
         0
               110001
                           1
                                          0
3 302
                                               10
                                                         442
                                                                361 0
''IMU BITE PROCESSING, ACCELEROMETER ACCUMULATOR, & CYRO TORQUING
''(TASKS 8, 9, 10)
     GMB IMU BITE
1.1
     GMC ACP ACUM
1 1
     GMF GYO TORQ
1 1
       SHARE LIB.DS
                           SIZE
                                       TIME PROCSR MEMORY COMP.TIME
3 303
         1
               110001
                            1
                                               10
                                                         442
                                                                362 0
T T
''DISPLAYS AND IMU MODING
                               (TASKS 10, 18)
     GDA DED DISP PROC
                                  DEDICATED DISPLAY PROCESSOR
1 1
     GDB AVVI AMI PROC
                                  DEDICATED DISPLAY, AVVI, AMI PROCESSOR
1 1
     GDE ADI PROC
                                  DEDICATED DISPLAY ADI PROCESSOR
11
     GDF HSI PROC
                                  DEDICATED DISPLAY HSI PROCESSOR
1.1
     GDZ DISP PROC
                                  CRT DISPLAY PROCESSOR
1 1
     GMN IMU MODING
                                  IMU MODING
1 1
     GPC AD CALC
                                  AIR-DATA CALCULATIONS
11
       SHARE LIB.DS
                           SIZE
                                       TIME PROCSR MEMORY COMP.TIME
3 304
               110001
                            1
                                         0
                                               10
         1
                                                        442
                                                                390 0
11
"'IMU GYRO AND ACCELEROMETER FUNCTIONS
                                             (TASKS 10, 19)
     GML_ACP_TRSF
GMK_GYO_COMP
7.7
                           IMU ACCELEROMETER PULSE TRANSFORMATION
1 1
                           IMU GYRO COMPENSATION
1 1
       SHARE LIB.DS
                           SIZE
                                       TIME PROCSR MEMORY COMP.TIME
3
  305
       1
               110001
                             1
                                          0
                                                10
                                                       442
                                                                16 1.344
''NAVIGATION (TASKS 10, 15)
    GNA MLS MEAS MSBLS MEASUREMENT PROCESSING
GNB TACAN MEAS TACAN MESSUREMENT PROCESSING
GNC BARO ALT BARO-ALTIMETER MEASUREMENT PROCESSING
GND RADAR ALT RADAR-ALTIMETER MEASUREMENT PROCESSING
GNE NAV EXEC NAVIGATION EXECUTIVE
GN1 DATA SNAP DATA SAVING
GN3 MEAS SCHDLR MEASUREMENT SCHEDULER
11
1.1
11
                           RADAR-ALTIMETER MEASUREMENT PROCESSING
T T
1 1
11
1 1
     GN7 NAV FILTER
                           FILTER
11
       SHARE LIB.DS
                           SIZE
                                        TIME PROCSR MEMORY COMP.TIME
3 306
        1
               110001
                             1
                                          0
                                                10
                                                         442
                                                                368 0.15
''GUIDANCE
              (TASK 10)
                           APPROACH/LANDING GUIDANCE
     GGB AL GUID
        THE FOLLOWING ARE CONTROLLED VIA GGB
```

```
1.1
    GGC P TRAJ
                          PITCH TRAJECTORY
1 1
     GGD TRAJ CAP
                          TRAJECTORY CAPTURE
7 1
    GGE SGS
                          STEEP GLIDESLOPE
1 1
    GGF F SGS
                          FLARE & SHALLOW GLIDESLOPE
1 1
    GGG FF
                          FINAL FLARE
1 1
    GGH_P_SYNC
                          PITCH SYNCHRONIZATION
1 1
    GGI R CMD
                          ROLL COMMAND
1 1
       SHARE LIB.DS
                          SIZE
                                      TIME PROCSR
                                                    MEMORY
                                                             COMP.TIME
3 307
         I
              110001
                            1
                                        0
                                              10
                                                       442
                                                             370 0
1 1
'TAEM NAVIGATION
                     (TASK 15)
    GEN TAEM NAV EXEC
                          CYCLIC EXECUTIVE
1 1
    GN2 INFLT HARDSTAND INFLIGHT/HARDSTAND UPDATE
1 1
    GN4 COV RECONFG
                          STATE & COVARIANCE RECONFIGURATION
1 1
    GN5 AVG G DP
                          DOUBLE PRECISION AVERAGE G
1 1
     GN6 COV PROP
                          COVARIANCE MATRIX PROPAGATION
1.1
       SHARE LIB.DS
                          SIZE
                                     TIME PROCSR MEMORY
                                                             COMP.TIME
              110001
                                              10
                                                       442
3 308
         1
                            1
                                        0
                                                             357 0
''IMU MAJOR FUNCTIONS
                         (TASK 19)
    GMG MAJ EXEC
                          MAJOR CYCLE EXECUTIVE
1 1
     GMI T UPDATE
                          TRANSFORM UPDATE
1 1
    GMJ_TOR_TRSF
                          TORQUING TRANSFORM
1 1
    GMM LAT FUNC
                          LARGE ANGLE TORQUING
1.1
     GMQ LSF FILR
                          LEAST SQUARES FILTER
7 7
       SHARE LIB.DS
                          SIZE
                                      TIME PROCSR MEMORY
                                                             COMP.TIME
  309
         1
              110001
                                        O
                                              10
                                                       442
3
                            1
                                                             353 0
''IMU ATTITUDE AND NAV-BASE TO CLUSTER TRANSFORMATION
                                                           (TASK 20)
    .CMS IMU ATT
     GMP TNB CL
1 1
       SHARE LIB.DS
                                           PROCSR MEMORY
                          SIZE
                                      TIME
                                                             COMP.TIME
              110001
                            1
                                        0
                                              10
                                                       442
                                                             354 0
3
  310
         1
''IMU CALIBRATION
                     (TASK 21)
     GMU_HANG_CALA
                          HANGAR CALIBRATION A
11
     GMV HANG CALB
                          HANGAR CALIBRATION B
7 1
                          PREFLIGHT CALIBRATION A
     GMT PFLT CALA
1 1
       SHARE LIB.DS
                          SIZE
                                      TIME PROCSR MEMORY
                                                             COMP.TIME
3 311
         1
              110001
                                        0
                                              10
                                                       442
                                                             16 30.0
                            1
''REDUNDANCY MANAGEMENT
                           (TASKS 10, 18)
     GRE FDIR
                          FDI SEQUENCER
1 1
        THE FOLLOWING ARE CONTROLLED BY GRE
1 1
     GRF TRANS FDIR
                          TRANSDUCER SEQUENCER
11
     GRG_ACT_FDBK_FDIR
                          ACTUATOR FEEDBACK SEQUENCER
11
     GRH SWT FDIR
                          SWITCH SEQUENCER
7 7
                          RATE-GYRO SEQUENCER
     GRI RGA FDIR
```

```
1 1
    GRJ AA FDIR
                         ACCELEROMETER ASSEMBLY
7 1
    GRK RA FDIR
                         RADAR ALTIMETER
7 1
    GRL IMU FDIR
                         IMU SEQUENCER
1 1
    GRM ADTA FDIR
                         ADTA SEQUENCER
1 1
    GRN TACAN FDIR
                         MSBLS SEQUENCER
    GRO MSBLS FDIR
                         MSBLS SEQUENCER
1 1
    GRP BF FDIR
                         BODY FLAP SEQUENCER
1 1
       SHARE LIB.DS
                         SIZE
                                     TIME
                                          PROCSR MEMORY COMP.TIME
              110001
                           1
3 312
         1
                                       0
                                             10
                                                      442
                                                            428 0
"USER INTERFACE SUPERVISOR
                               (TASK 34)
     DMC SUPER
                         USER INTERFACE CONTROL SUPERVISOR
     DMC_FUNCTIONS
                         KEYBOARD FUNCTIONS
1 1
    DMC APP INT
                         APPLICATION CONTROL INTERFACE
1 1
    DMC MCDS CNT
                         MCDS DISPLAY CONTROL
    DMC_APP_KEY_PROCESS APPLICATION KEYS PROCESSING
11
    DMC DISPLAY
                         DISPLAY COORDINATION
    DMC NEW DISPLAY
                         NEW DISPLAY PROCESSING
     DMC_SEQ_REQ_PROC
                         SEQUENCE REQUEST PROCESSING
7 5
     DIM ICC COLLECTOR
                         ICC MSG COLLECTOR
       SHARE LIB.DS
                          SIZE
                                     TIME PROCSR MEMORY
                                                            COMP.TIME
 3 313
         0
              110001
                        10380
                                       0
                                             10
                                                      442
                                                            431
''CYCLIC DISPLAY PROCESSING
                               (TASK 35)
     DCI#CYC
                         CYCLIC DISPLAY PROCESSING
1 1
     DCI#CON
                         DATA CONVERSION
T 7
     DCI#FMT
                         DATA FORMATTING
11
       SHARE LIB.DS
                          SIZE
                                     TIME
                                           PROCSR MEMORY COMP.TIME
                                                      442 435 2.06 8.3
 3 314
         0
              110001
                          5252
                                       0
                                             10
''MATED DROP, WARMUP, AND RAW DATA PROCESSING
                                                  (TASKS 10, 18)
     GEM_MATE_DROP_EXEC MATED/DROP EXECUTIVE
1 1
     GGJ AVG G SP
                          SINGLE PRECISION AVERAGE G
1.1
     GGK USER PARAM
                          USER PARAMETERS
11
     GPA ADTA DATA PROC ADTA DATA PROCESSOR
     GPM MSBL DATA PROC MSBLS DATA PROCESSOR
T #
     GPR RA DATA PROC
                          RADAR ALTIMETER PROCESSOR
7 7
     GPT TACAN DATA PROC TACAN DATA PROCESSOR
1 1
     GTM TACAN WARMUP
                          TACAN WARM-UP
11
     GTP MSBLS WRMUP
                         MSBLS WARM-UP
1 1
     GTR RA WRMUP
                          RADAR ALTIMETER WARM-UP
t t
       SHARE LIB.DA
                          SIZE
                                     TIME PROCSR MEMORY COMP.TIME
3 315
         0
              110001
                            1
                                       0
                                              10
                                                      442
                                                            396 O
```

''SYSTEMS MANAGEMENT PERF	ORMANCE	MONITORI	NG (TASK	S 12, 13)			
'' SFD FAULT DETECT ANNUN FAULT DETECTION & ANNUNCIATION								
SPP_PRECON_PROCESS		PRECOND	ITION PR	OCESSING				
'' SSC_SPECIAL_COMP		SPECIAL	COMPUTA	TIONS				
'' SAS ANALOG SCALE		ANALOG	SCALING					
'' SHARE LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP, TIME			
3 316 1 110001	1	0	10	442	425 0			
7 1								
''PERFORMANCE MONITORING	CONTROL	(TASK 12	:)					
'' SPM_PERFORM_MON_CONT	ROL	PM CONT	ROL					
'' SHARE LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP.TIME			
3 317 1 110001	1	0	10	442	387			

()

5.2.3.3.4 Messages. All data transmissions performed by the IOP of the GPC being simulated were defined as messages using IMSIM Form 5. Other transmissions were not simulated as they had no impact on loading of the GPC under study; i.e., they did not occupy resources of the GPC and, due to the configuration of the DDPS, could not interface with transmissions controlled by the GPC.

Each Read transmission is preceded by a Write transmission to query the appropriate device. Although a message defined via Form 5 represents a type of transmission, it may represent one or more occurrences of the transmission, each with different source, destination, length, etc. These capabilities are employed in characterizing DDPS transmissions for the model, and are best illustrated by example. Consider the pair of message definitions 6 and 7 as shown in the list of forms below (the first two lines which begin with the number 5). As indicated by the "Total" field, each of these messages represents three transmissions. Message 6 represents a sequence of Write transmissions (from memory 1, denoted by 70001) to a destination denoted by Variable 380. This variable is described in Section 5.2.4; in essence, it states that the destination for the first (of three) transmissions is the Multiplexer/Demultiplexer for the Flight Critical Forward Instruments #3 (60011), that the second is Multiplexer/Demultiplexer for the Flight Critical Forward Instruments #2 (60010), and that the third is Multiplexer/Demultiplexer for Flight Critical Forward Instruments #1 (60009).

The "Length" and "Interval" fields are each comprised of three subfields; the value 16 in the first subfield denotes a constant length (12 characters) or interval (1 ms), as indicated by the second subfield (the third subfield is not used for the DDPS model). "Length" is expressed in terms of 8-bit characters of data transmitted, and transmission rates for hardware (as described in Section 5.2.3.2) are adjusted to compensate for the added control bits of each transmission. The "Nature" of message 6 is given as 0 - indicating that it can only be initiated when the task has been activated - and the "Start" of 1 causes the first transmission to be initiated 1 ms after the task commences.

Message 7 represents the response to message 6 and its transmission is correlated on a one-one basis with transmission of message 6 by specifying Nature 2 and giving the "Source" of the message as message 6 (50006). Note that in this situation, transmission of message 7 is triggered by completion of a message 6 transmission, and the source of message 7 is taken to be the sink of message 6. Message transmissions were simulated whenever a task was activated which includes the message among its required elements (see Section 5.2.3.3.2). Interference in accessing system components for transmission is automatically handled by IMSIM according to hardware and corriguration specifications included in Forms 6 through 12.

The scripted inputs for these messages on IMSIM Specification Form 5 were as follows:

††R	EAD FRO	M FF01,	FF02, FF0	3 -						
1 1				(ACCLRM)						
1 1				LLER 1 & 2			HC)			
1 1				ROLLER 1 &						
1 1				R ASSEMBLY	1 & 2	(RPTA)				
1 1		M DISCRE								
1 1			RCE SINK			ERVAL	START	TOTAL	SE	\mathbf{T}
5	6 0			16 12 0		1 0	1	3		
5	7 2	500	06 70001	16 56 0	16	0 0	0	3		
1 1										
		4 MDM DI								_
† †			RCE SINK			ERVAL	START	TOTAL	SE	\mathbf{T}
5	8 0		01 60012		16	0 0	1	1		
5	9 2	500	08 70001	16 24 0	16	0 0	0	1		
11										
''R			01, FF02,		***		am i nm	mom 1 T		
				LENGTH		ERVAL		TOTAL	SE	T
5	10 0			16 2 0	16	1 0	1	3 3		
5	11 2	500	10 \0001	16 28 0	16	0 0	0	3		
	EAD 1800	M FFO1 -								
11			INT VOLTA	CP (TCA)						
11				SEMBLY (AD	ጥል ነ					
1 1	MSBLS		ODUCER AD	onmunt (m	'IN'					
1.1			AN REGIST	ER						
1.1			ER (RAD A							
7.7				LENGTH	INT	ERVAL	START	TOTAL	SE	T
5	12 0			16 12 0		0 0	1	1		_
5	13 2			16 32 0	16	0 0	ō	ī		
11			,,,,,,				_			
* * R	EAD FRO	M FF02 -								
1.1	ADTA									
1.1	MSBLS	}								
1.1	TACAN	AND TAC	AN CONTRO	L REGISTER						
1 1	RAD A	LT								
1 1	NAT	URE SOU	RCE SINK	LENGTH	INT	ERVAL	START	TOTAL	SE	\mathbf{T}
5	14 (700	01 60010	16 10 0	16	0 0	1	1		
5	15 2	500	14 70001	16 34 0	16	0 0	0	1		
1 1										
		M FF03 -	•							
7 7	LCA									
11	ADTA									
T 7	MSBLS									
				L REGISTER						_
-				LENGTH		ERVAL	START	TOTAL	SE	T
5	16 (001 60011		16	0 0	1	1		
5	17 2	2 500	16 70001	. 16 30 0	16	00	0	1		

1 1											
	EAD	ADTA FRO									
11		NATURE			LENGTH				_	SE	T
5	18				16 2 0				1		
5	19	2	20018	70001	16 14 0	10	0 0	0	1		
	E A D	CT OCK /	אסים לוויזיש	ነበሚ ገ እር	, FF02, FF03	,					
11	EAU				, FPO2, FPO3 LENGTH		TAVGT	ሚያል ውስ	TOTAL	SE	φ.
5	20		70001		16 2 0				3	015	-
5	21	2			16 14 0				3	•	
11		_	50020	,0001	10 14 0		0 0	Ū	_		
''R	EAD	FROM FA	01, FA02	2, FA03	_						
1.1		TE GYRO	•	-							
1 1	F	MDM DI	SCRETES								
1 1		NATURE	SOURCE	SINK	LENGTH	INTE	RVAL	START	TOTAL	SE	T
	22		70001		16 6 0			1	3		
5	23	2	50022	70001	16 18 0	16	0 0	0	3		
11											
' 'R		FROM FA									
11	A(N FEEDBA	ACKS (ASA)						
11	P.F	MDM DI		CTNU	7 TIMOMII	TNI	TATE TO THE	CM V DW	TOTAL	SE	т
5	24				LENGTH 16 6 0		ERVAL		101AL	5E	ī
5		2			16 26 0		0 0		1		
11	23	<i>-</i> -	30024	70001	10 20 0	10	0 0	U			
t t R	EAD	FROM FA	01. FAO:	2 –							
11		T ATTAC			E (LCA)						
T T		NATURE			LENGTH	INT	ERVAL	START	TOTAL	SE	\mathbf{r}
5	26		70001		16 2 0		1 0		2		
5	27	2	50026	70001	16 12 0	16	0 0	0	2		
1.7											
	CC I	FOR REDU	NDANT S	ET							
11			SOURCE		LENGTH			START		SE	T
5	28	0	383	384	16 256 0	16	0 0	0	1		
11											
				FROM M	ASS MEMORY						
		JSED IN .		0.7377	* 133/6/11	~370	171 7 1777 & T	om A There	m Om A T	C TO	m
11					LENGTH 16 2 0			START		DE	Т
11					16 1024 0			0	1 1		
11	ЭΙ	2	20020	70001	10 1024 0	10	0 0	U	1		
מוו	EAD	PERFORM	ANCE DA	ምል ምጽ <u>በ</u>	РСМИП						
7.1	*****	NATURE	SOURCE		LENGTH	INT	ERVAJ.	START	TOTAL	SE	Т
5	32				16 256 0				_		_
5					16 256 0				_		
7 7											

† † W † †		1, FF 0 2, FF03 FROL REGISTER SCRETES						
1 1 5	NATURE 50 0	SOURCE SINK	LENGTH 16 52 0		START O	TOTAL 3	SE	T
1 7								
''W		DISCRETES TO		T-1700+1170+14	am t n m	mom4*	am	
5	NATURE 51 O		LENGTH 16 48 0		START O	TOTAL 1	SE	T
11	J1 0	70001 00012	10 40 0	10 00	U	T		
1 *W	RITE IMU TO	FF01, FF02,	FF03					
1 1	NATURE	SOURCE SINK		INTERVAL	START	TOTAL	SE	T
5	52 0	70001 380	16 4 0	16 0 0	0	3		
11								
' 'W		1, FAO2, FAO3						
1.1	FA MDM DI	ACE SERVO AMP	FILTER (WOV)					
7 1	NATURE		LENGTH	TNTERVAL	START	TOTAL	SE	T
5	53 0		16 36 0		0	4		_
T 1								
	RITE TO DDU	1, DDU2 -						
11	AVVI							
1 T	AMI							
11	ADI HSI							
11	SPI							
1.1		SOURCE SINK	LENGTH	INTERVAL	START	TOTAL	SE	T
5	54 0	70001 382		16 0 0	0	2		_
1 †								
	RITE TO DEU							
11	NATURE	SOURCE SINK		INTERVAL	START		SE	T
5	55 0	70001 60001 70001 60002		16 0 0 16 0 0	1	1 1		
5 5	56 0 57 0	70001 60002		16 0 0	1	1		
11	37 0	70001 00003	10 1024 0	10 00	т.	-		
1 1 W	RITE PRIME	FRAME TO PCMM	บ					
1 1	NATURE	SOURCE SINK	LENGTH	INTERVAL	START	TOTAL	SE	\mathbf{T}
5	58 0	70001 60095	16 512 0	16 9 0	0	1		
11								
' 'R		AND WRITE NE			COLATION	man A t	e re	m
5	nature 59 0	SOURCE SINK 60027 70001		INTERVAL 16 0 0	START O	TOTAL 1	SE	T
ر 5	60 2		433 0 0	16 1 0	0	1		
11	3 	_qos> 00001	100 00	20 20	_	~		

5.2.3.3.5 Data Sets. Data sets represent files of data allocated to auxiliary storage. For representation of the DDPS, two data sets were defined, as shown in the Form II listing below. Data set 1 represents the library file from which major function overlays are selected for main memory. Since simulation of the Mated/Drop Test does not include the overlay function, it is performed as part of the initializing process of the model; nevertheless, a library data set must be specified for each routine to be addressed, and the data set must be defined.

Data set 2 represents one of the mass storage files for display images. Only one is represented as only one is to be used for a given system configuration.

Both data sets are assigned to storage 1 (mass storage facility) and are defined to be serially addressed ("Org" = 0). The "Initial Size" and "Maximum Size" for a data set are separately specifiable to permit dynamic change in the data content of a data set; however, this feature is not required for DDPS Simulation, and therefore, both fields are specified as the same: 107 characters for the library, and 1.024x107 characters for the displays.

The scripted inputs for these data sets on IMSIM Specification Form 11 were as follows:

11	S	STORAGE	ORG	INIT.SIZE	MAX.SIZE		
11	1	1	0	10000	10000		
11	2	1	0	10240	10240		

5.2.3.3.6 <u>Executive Algorithms</u>. IMSIM Form 13 is used to select from among various options the methods to be used by IMSIM in performing some of the functions normally relegated to executive or operating systems of computers. While some are not relevant to DDPS Simulation, they are all specified and listed below with clarification as needed.

· · ALGORITHM SELECTION

1.1	1A	ΊB	2A	2B	2C	2D	2E	ЗА	3B	3C	4A	4B	5A	5B	6A
13	1	0	I	7	0	0	0	7	7	1	1	1	0	0	0
t t															

- If alternative paths between a source and sink are available, but all are in use when a transmission is to be performed, defer the transmission until any path becomes available.
- 1B If more than one path for a transmission is open, choose the first one in the list.

- 2A 7 2B 2C 2D 2E
- These options pertain to memory allocation and are not meaningful for the DDPS simulation.
- $^{\rm 3A}$) Processing is interruptible for executive functions and for tasks of service class 1.
- 3C Scheduling precedence is determined by task priority.
- 4A This option pertains to use of nonsharable systems components (other than a CPU) by tasks, and is not relevant to DDPS Simulation.
- 4B All transmissions are to be over explicity defined data links, i.e., no implicit links are allowed.
- 5A) These options pertain to simulation of program loading, and are not relevant to the DDPS Simulation.
- 6A The CPU is not to be interrupted in performing a task in order to initiate and service I/O (this function is performed by the IOP of the DDPS).

5.2.4 Model Adaptation and Parameterization (S.O.W. 2.1.4)

The following paragraphs under this section describe in detail the work performed under this task. In summary it entailed:

- a. Logic changes made to IMSIM to accommodate NASA-unique simulation, which include:
 - 1. Cyclic activation of functions
 - 2. Dynamic setting of conditions through the jobschedule
 - 3. Delivery of computational units by the routines through the setting of gates and savex cells
 - 4. Suppression of zero-length transmission
 - 5. Deletion of segments of IMSIM not pertaining to the NASA simulation to reduce computer simulation run time
 - 6. Incoproration of a checkpoint capability
- Incorporation of a new report #2 in IMSIM to better reflect the status of task activations and cyclic operations.

The reports for message traffic were revised for easier reading.

- c. Defining a total of 100 new variables for:
 - Stipulating functional conditions for delivering computation time by routines
 - 2. Defining sources and sinks and message length for data messages
 - 3. Determining conditions for operations of functions
 - 4. Calculating time slices
 - 5. Clearing keyboard inputs
 - 6. Determining branch locations dependent upon operational conditions
 - 7. Time slice setting and counters
- d. Parameterizing the model with the parameters reflecting the simulaced hardware and software as described in detail in paragraph 5.2.3.
- 5.2.4.1 NASA-Unique IMSIM Revisions. IMSIM was adapted for NASA-unique conditions with the following changes:
 - a. Facilitate cyclic activation of functions
 - b. Dynamic setting of conditions through the jobschedule
 - c. Delivery of computational units by routines
 - d. Suppression of zero-length transmission
 - e. Deletion of segments of IMSIM not pertinent to the NASA simulation

5.2.4.1.1 <u>Cyclic Activation of Functions</u>. In order to facilitate the operation of cyclic functions at various intervals, transactions were generated at each of the intervals, parameter 3 (P3) was set with the unique gate number for that function, and parameter 4 (P4) was set with the unique task number for that function. The gate was used for intercommunication with the prototype task and was closed again after task was activated. The transactions were only admitted if the conditions for operation of that function were met.

Cyclic activation took place at the following intervals for the specified functions as given in Table 5-1 below.

Table 5-1. Cyclic Activation of Functions

		FUNCTION	TASK	
INTERVAL	FUNCTION NAME	DESIGNATOR	NUMBER	GATE
40 ms	System Software Interface Proc	AIE	7	1502
	Minor Cycle Executive	GMA	9	1504
	Fast Cycle Executive	GEF	6	1501
	Mated/Drop Idle Mode	GAD	8	1503
50 ms	S.M. Data Acquisition	SDA	1,	1520
80 ms	Mated/Drop Executive	GEM	10	1505
100 ms	Cyclic Display Processing	DCI	35	1517
200 ms	MCDS Input Processor	DMI	32	1514
320 թs	IMU Major Cycle Executive	GMG	19	1508
500 ms	S.M. Performance Monit. Cntrl.	SDM	12	1521
1000 ms	GPC Switch Monitor	ARA	37	1518
2000 ms	TAEM Navigation Cyclic Exec.	GEN	15	1506
2 ms	S.M. Flight Ops 2	SF0	13	1522
	User Interface	DMC	34	1516
	S.M. Subsystem Conf. Monitor	SPM	14	1523
	FCS Dedicated Display Checkout	GTX	24	1513
	IMU Attitude Determination	GMS	20	1509
	IMU Calibration	F⊿MT,GMU,GMV	21	1510
	IMU Gyro Alignment	GMX	22	1511
	IMU Velocity & Tilt	GMY	23	1512

The logic for this change is depicted in Figure 5-2 giving the flow diagrams for this logic. Reference 1, the MODLIT Reference Manual, details the symbols and code used in these flow diagrams.

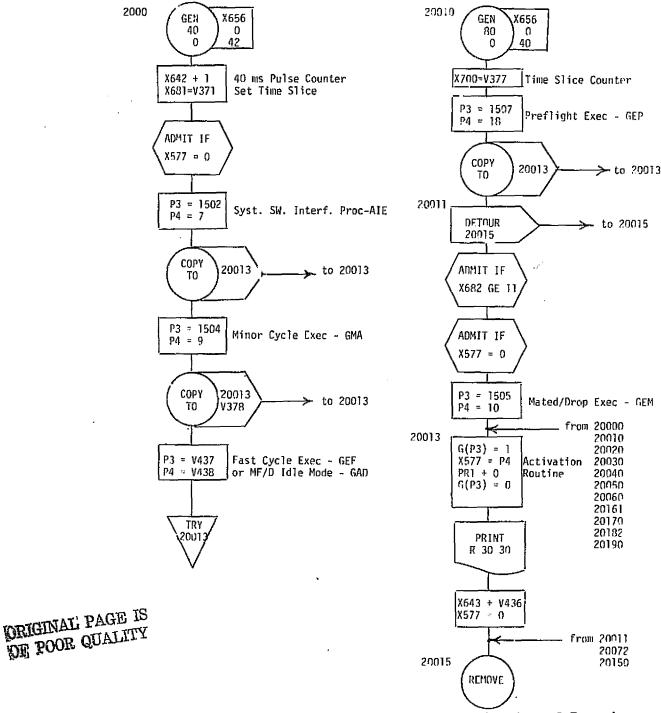


Figure 5-2. Flow Diagrams for Cyclic Activation of Functions

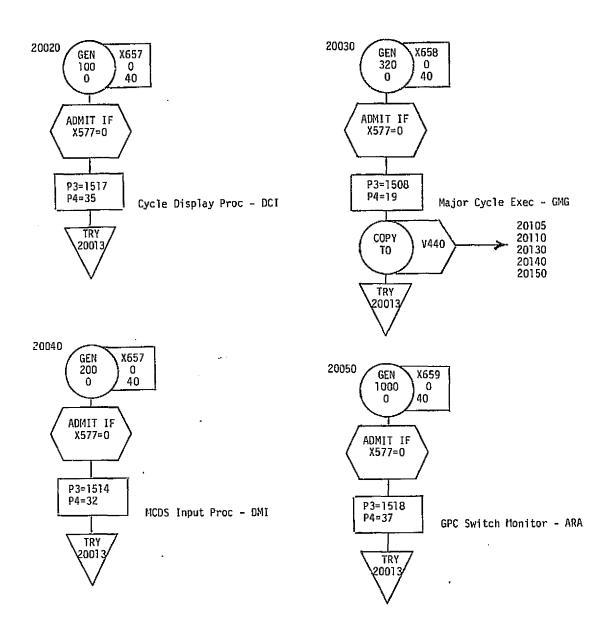
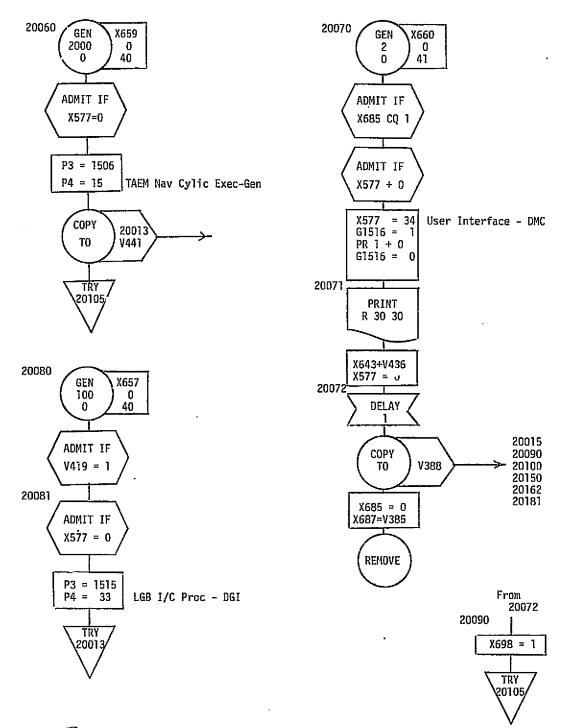


Figure 5-2 (cont)



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Figure 5-2 (cont)

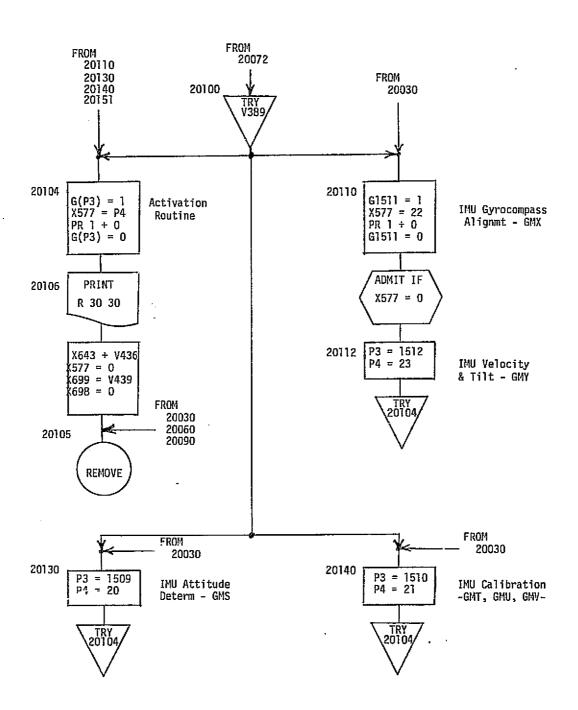


Figure 5-2 (cont)

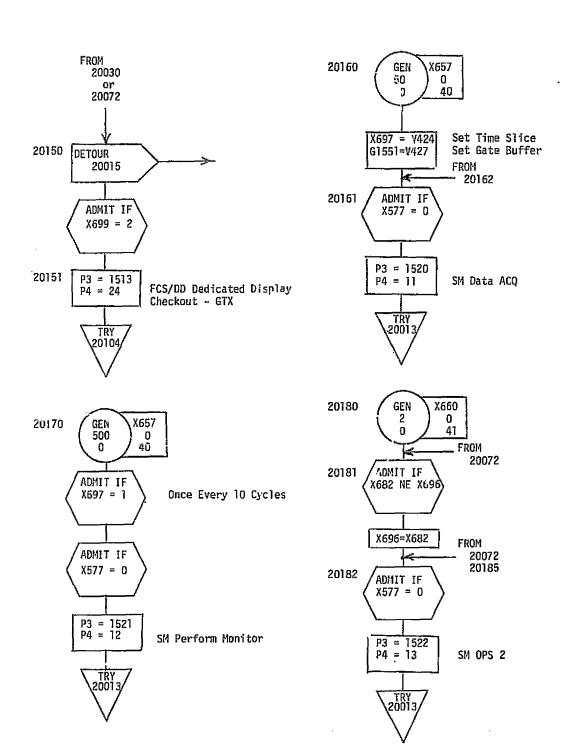


Figure 5-2 (cont)

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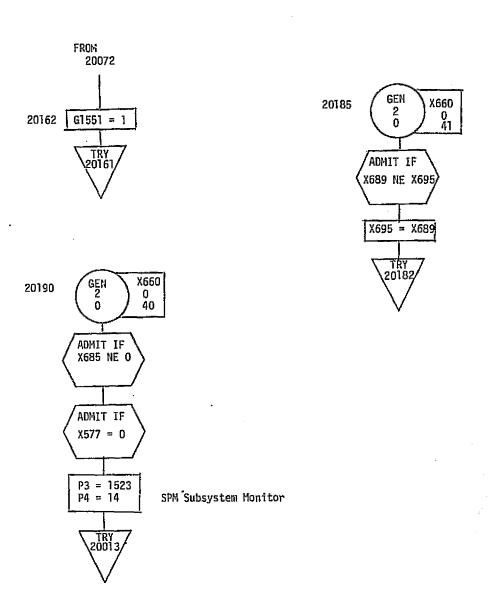


Figure 5-2 (cont)

5.2.4.1.2 Dynamic Setting of Conditions Through the Job Schedule. In order to enable dynamic setting of events during a simulated time period (e.g., manual actions taker by the Commander or Pilot, or request of Specialist Functions) IMSIM was modified to recognize this at the time specified in the job schedule. This was accomplished by adding a new form with a zero in the 2nd field, indicating this was an event occurrence. In this case, the next four fields on the line were interpreted respectively as a Savex Cell, incremental value, 2nd Savex Cell, and 2nd incremental value. The IMSIM Program Logic Manual (Reference 3) details the program blocks where the revision is inserted.

The code accomplishing this is as follows:

```
REVISE 238000 238000 " SET SAVEX FROM JOBSCHEDULE

1010 DETOUR 1012
ADMIT IF P2 = 0
X(P3) + P4
DETOUR 30012
ADMIT IF PL1 GR 0
SAVE P5

30010 X(P6) + P7
POP
POP
DETOUR 30010
ADMIT IF PL1 = 0

30012 REMOVE
1012 P2 = V153
```

5.2.4.1.3 Delivery of Computational Units by Routines. IMSIM was modified to calculate the computation time for a given function by summing the computational units assigned to each routine that is called by this function at a particular cycle. Thus, the routine will be the determining factor as to the amount of computation time it provides, dependent upon the conditions under which it is called to operate.

Calculation of the computation time for each routine is discussed in more detail in paragraph 5.2.4.2.

The code accomplishing this change is as follows:

```
REVISE 1134000 1134000 'PREVENT COMP TIME FROM MESSAGES ADMIT IF X(P2) = 1
```

5.2.4.1.4 <u>Suppression of Zero-Length Transmissions</u>. This change was incorporated in <u>IMSIM</u> as a technical one to control the message transmission by its length, i.e., a zero-length transmission would prevent transmission or receipt.

The code for this change is as follows:

REVISE 881000 881000

''SUPPRESS ZERO LENGTH TRANSMISSION

DETOUR 1606

ADMIT IF P3 = 0

POP P2

TRY 1865

1606 P2 = P6

5.2.4.1.5 <u>Deletion of Segments of IMSIM</u>. Certain segments of IMSIM, being a general purpose model, did not pertain to the simulation to be performed for NASA. These deletions were for Virtual Machine and Memory Recording, and to eliminate prototypes after they are initialized. These deletions avoided unnecessary scanning and calculations, that became a burdensome factor in the actual wall clock time for simulation runs.

The code for this change is as follows:

REVISE 39000 39000

''SPEED-UP BY ELIMINATING PROTOTYPES

REVISE 649000 661000

" SPEED-UP BY ELIMINATING V.M. & MEM.RECO

TRY 1352

REVISE 663000 680000

X(V67) = 1

"'SPEED-UP BY ELIMIN. V.M. & MEMORY RECORDING

- 5.2.4.1.6 <u>Checkpoint Capability</u>. This feature was incorporated in MODLIT/IMSIM to facilitate NASA simulation runs of longer duration, with a restart capability from previously established checkpoints.
- 5.2.4.1.7 New Reports. The following two new reports were incorporated in IMSIM to ease the reading of statistical outputs for cyclic functions performed during a simulation run.

REPORT 2 1 1

DURING V232 SECONDS OF SIMULATED SHUTTLE OPERATIONS

A TOTAL OF BW1160 DIFFERENT FUNCTIONS WERE INTRODUCED.

THESE FUNCTIONS WERE ACTIVATED BW1166 TIMES, STATUS IS:

BW1196 WERE COMPLETED

B1167 ARE WAITING FOR NEXT ACTIVATION

B3032 ARE IN READY STATE, I.E. WAITING FOR CPU

B1182 ARE WAITING FOR MESSAGES TO COMPLETE

V306 PRESENTLY EXECUTING, I.E. IN ACTIVE STATE

FUNCTIONS WERE INTERRUPTED BW2000 TIMES.

X643 FUNCTION ACTIVATIONS WERE ABORTED AS FUNCTION STILL ACTIVE. ENDR

REPORT 30 1 1 X577

AT TIME C1 ACTIVATION FOR FUNCTION X577 ABORTED, AS

FUNCTION X577 IS STILL ACTIVE. ENDR

The two reports for "Message Start" and Message End" were modified for easier reading and scanning in the simulation results.

The new format is reflected in the history printout of simulation runs in Appendix C.

5.2.4.2 <u>Compute Times for Routines</u>. Computational units in microseconds for routines pertaining to the Operating System or System Control were obtained from the ALT Functional Design Specification, Volume 2, Part 1 and Volume 2, Part 3. (Reference 19)

Computational units in microseconds for all other routines were determined by plotting all functions performed by each routine down to instruction level and applying the instruction execution times as given in IBM's Software System Notes #156-005 and IBM's CPU Instruction Execution Times Notes #C69-75-254 and #C69-75-256 (References 26, 27, and 28).

The conditions for operation of the routines (including flight conditions and states of the system) were then included for proper allocation of computing units, and were incorporated in "Variables" used by IMSIM to generate the computation time.

As IMSIM is based on millisecond time units, the computation times were given in fractions to 3 decimals for the proper microsecond presentation multiplied by a factor of 0.48 to compensate for the CPU processing speed factor so that the end result again would give the absolute calculated computation time for each routine.

Following is a discussion of the Variables developed for the routines to determine delivery of computation time. For clarity, the multiplication factor of 0.48 for all absolute computation times included to compensate for the CPU's speed factor), has been omitted from the discussion in this paragraph (see Section 5.1.3.4). The matrix values and makeup of all Variables are specified in detail in Appendix A).

a. If in the columns designated for computation time on form 3 a Variable 16 appears in column 1, then the succeeding value (X44) is the unconditional computation time whenever the routine is called for execution.

Any value other than 16 indicates functional conditions which are expressed in that numbered variable.

b. Routine 31 (TAEM GUIDANCE) - Variable 359 V359 = DFN (X700)(matrix values)

The computation time of V359 is a discrete function of the 80 ms Time Slice Counter X700. This counter maintains the count of 80 ms cycles for 12 periods (960 ms). V359 is 0 for counter values between 0 and 5 and for a value of 7. V359 equals 0.03 ms for a counter value of 6 and 8 through 12. Computation time therefore varies between 0 and 30 μ s.

c. Routine 42 (IMU Minor Cycle Executive) - Variable 355 V355 = 1.55 + (RF1) * 0.3 The computation time of the variable consists of a constant 1.55 ms and a random-generated time ranging between 0 and 0.3 ms. Computation for this variable is therefore between 1.55 and 1.85 ms. d. Routine 45 (IMU Resolver Processing) – Variable 356 V356 = 0.72 + (RF1) * 0.11 Variable 356 has a computation time consisting of a constant 0.72 ms and a random-generated time ranging from 0 to 0.11 ms. Comp time for this routine therefore varies between 720 μ s and 830 μ s.

e. Routine 63 (IMU Velocity Tilt) - Variable 397 V397 = V398 + X44 V398 = DFN (X685)(matrix values)

The computation time of this variable is a discrete function of the Specialist function state. For a TERMINATE state V398 = 0.005 ms and for any other Specialist function state V398 = 0.135 ms. The fixed value of the routine 63 Savex cell X44 is 0.26 ms. The comp time of this variable therefore is between 265 and 395 μ s.

- f. Routine 134 (GPC/PCMMU Data Cycle Synchronizer) Variable 364

 V364 = 0.5 + (RF1) * 30 + X44

 The computation time for this variable consists of a constant 0.5 ms
 plus a random-generated time of from 0 to 30 ms plus a computation time
 which is stored in Savex cell X44. The initial value of X44 is 0.215 ms.

 Comp time therefore varies between 715 µs and 30.715 ms.
- g. Routine 135 (GPC Downlist Data Control Processor) Variable 365
 V365 = V362 + V356 + 0.66
 V362 = 0.56 + (RF1) * 0.03 = Time for Routine 303
 V356 = 0.72 + (RF1) * 0.11 = Time for Routine 45
 The computation time for variable 365 consists of the computation time for routine 303, routine 45, and a constant of 0.66 ms. Comp time will therefore range between 1.94 and 2.08 ms.
- h. Routine 155 (Systems Management Data Acquisition) Variable 386 V386 = DFN (G1551)(0.0024 0 0.096 1)

The computation time for this routine is a function of the setting of gate 1551, which is the processing gate for data acquisition. This gate is set every 50 ms by Variable 427, which is a function of the value produced Ly a random-number generator. If the gate is set, processing time will be 200 microseconds, if the gate is not set, comp time drops to 5 microseconds.

i. Routine 301 (Flight Control) = Variable 350
 V350 = 0.98 + V351 + V352
 V351 = DFN (X683, X684)(matrix values)
 V352 = FDN (X681, X682)(matrix values)
 X683 = Navigational Status Savex
 X684 = Flight Condition Savex
 X681 = Time Slice Savex
 X682 = Major Mode Savex

This variable consists of a fixed time of 0.98 ms plus two additional times which are discrete functions of system conditions. The time for Variable V351 is a function of Navigational state and flight conditions and can range from 0 to 0.615 ms. The time for Variable V352 is a function of the processing time-slice period and the major mode and has a range from 0.31 to $5.875~\mathrm{ms}$.

The computation time for this routine therefore is 1.29 ms minimum to 7.47 ms maximum.

j. Routine 302 (Mated/Drop Control) - Variable 361

V361 = V(V360)

V360 = DFN (V366, V367) (matrix values)

V366 = X681'2 80 ms Time slice

V367 = X684'2 Platform Release

The computation time for V361 is a variable whose identification number is defined by V360. For the conditions where the time slice is not 80 ms and the IMU platform has not been released or where the time slice is 80 ms and the IMU platform has been released, V360 = V365. For the condition where the time slice is not 80 ms but the IMU platform has been released, V360 = V363=0.

V365 = V362 + V356 + 0.66 V362 = 0.58 + (RF1) * 0.03 V356 = 0.72 + (RF1) * 0.11

For the condition where V360 = V363, the computation time of V361 will be zero.

For the condition where V360 = V365, the computation time for V361 will be determined by two randomly generated values plus a constant. For this condition, the computation time will vary between 1.96 ms. and 2.10 ms.

 Routine 303 (IMU Processing, Accelerometer Accumulator and Gyro Torquing) -Variable 362.

V362 = 0.56 + (RF1) * 0.03

The computation time of this variable is randomly generated and will range from 0.56 ms to 0.59 ms.

1. Routine 304 (Displays and IMU Moding) - Variable 390

V390 = 0.09 + V391

V391 = 0.01 + X687 * V392

V392 = DFN (X685, X682)(matrix values)

The value of V392 is a discrete function of the Major mode and the status of the Specialist Function. However, the value of V392 can only be used if DISPLAY status is in the "New Display" condition. Depending on the conditions of the Major mode, the Specialist function and Display conditions, V390 will have a range of 100 μs to 485 μs .

m. Routine 306 (Navigation) - Variable 368

V368 = X44 + 369

V369 = DFN (X682)(matrix values)

Computation time for V368 consists of a fixed value of 150 μs (stored in Savex cell X44) and a value which is a discrete function of the Major operational mode. The times for V369 are as follows:

- 0.3 ms for Null and Preflight Prep Modes
- 0.34 ms for Mated Idle, Mated Flight, Separation, Postseparation and TAEM Modes
- 0.16 ms for the Approach & Landing Mode
- 0.34 ms for the Rollout mode.

Computation time will therefore range between 490 ms and 310 ms.

n. Routine 307 (Guidance) - Variable 370

V370 = V(379)

V379 = DFN'(X682)(matrix values)

The computation times for this variable are defined by a variable which is selected by the conditions of V379. When the major mode is Null, Preflight Prop, Mated Idle, Mated Flight, Presep or Postsep, V379 = V363. When the major mode is TAEM, Approach & Landing or Rollout, V379 = V393.

V363 = 0

V393 = DFN (X688) (matrix values)

Savex Cell X688 contains Flight Path Conditions. For trajectory capture and steep glide slope conditions, V393 = 0.09 ms. For a shallow glide slope condition, V393 = 0.12 ms, and for the final flare condition, V393 = 0.08 ms.

The computation time for V370 is thus a function of major mode and flight path conditional states, and ranges between 0. and 120 μs .

o. Routine 308 (TAEM Navigation) - Variable 357

V357 = 1.9 + V358

V358 = DFN (X682)(matrix values)

The computation time of this variable is a constant of 1.9 ms plus a variable time which is a discrete function of the state of the Major Mode. For the Null, Preflight Prep, and Mated Idle states the variable time is 1.05 ms. For all other major mode states the variable time is 0.75 ms. Computation time for this routine is therefore between 2.65 ms and 3.95 ms.

p. Routine 309 (IMU Major Functions) - Variable 353

V353 = DFN (X682)(matrix values)

The computation time for Variable V353, is a discrete function of the state of the Major Mode. For NULL and Preflight Prep the computation time is 6.0 ms. For all other major modes the computation time is 5.3 ms.

q. Routine 310 (IMU Attitude and Nav-Base to Cluster Transformation) -Variable 354

V354 = DFN (V366, X682)(matrix values)

V366 = X681'2 = 80 ms time slice

The computation time of variable 354 is a discrete function of the 80 ms processing time slice and the Major Mode condition. Minimum time is 0.85 ms and occurs when the major mode is any mode other than NULL or Preflight Prep and the computation is within an 80 ms time cycle. The maximum time is 2.5 ms and occurs when the Major Mode is either NULL or Preflight Prep and the computation is not within an 80 ms time cycle.

r. Routine 312 (Redundancy Management) - Variable 428

V428 = V394 * 0.48

V394 = DFN (X700)(Matrix Values)

Savex Cell X700 is the 80 ms time slice counter which maintains a sequential count of the number of 80 ms time slices for each 960 ms time span. V394 will have a specific computation time depending on the time slice counter. These values are:

Value of Time Slice Counter	Value of V394
]	0.25 ms
2	0.075 ms
3	0.116 ms
4 5	0.316 ms
	0.105 ms
6	0.098 ms
7	0.238 ms
8	0.129 ms
9	0.128 ms
10	0.220 ms
11	0.093 ms
12	0.154 ms

Therefore, this variable will have a computation time ranging from 75 μs to 316 μs .

s. Routine 315 (Mated Drop, Warm Up, and Raw Data Processing) - Variable 396 V396 = 5.986 + V367 * (V362 + V395 + 0.125) + V390

V362 = Computation Time for Routine 303

V367 = Platform Release

V390 = Computation Time for Routine 304

V395 = DFN (X682) (matrix values)

The value of variable 395 is a discrete function of the Major Mode For all modes except Approach & Landing, and Roll Out, V395 = 0.15 ms. For the latter two modes, V395 = 85 μ s. The value of V362 will range from 0.56 to 0.59 ms (see sub "k"). The use of the times defined by V362 and V395 for V396 is dependent on the platform release condition. These variables are a part of the computation time if the platform is in a

released condition. The value of V390 will range from 0.1 ms to 0.485 ms (see sub "1"). From the above values, V396 will have a range between 6.036 ms and 7.336 ms.

- t. Routine 316 (Systems Management Performance Monitoring) Variable 425 V425 = DFN (λ 685)(matrix values) The computation time for this routine is a function of the Keyboard & Applications Control Savex setting. Normal computation time is 130 microseconds, but when Specialist Key Special Computations is requested, the computation time increases to 320 μ sec.
- 5.2.4.3 <u>Variables</u>. The Variables for the computation time of routines were discussed in the previous paragraphs.

The other variables used in this model for the ALT Space Shuttle simulation are for the following areas:

- a. System Conditions
- b. Sinks or Sources for Messages
- c. Time Setting and Generation
- d. Task Branching
- e. Go/No-Go Setting
- f. Access Time for Mass Memory
- g. Memory determination for each of four Virtual Machines

They are discussed below in the same order.

5.2.4.3.1 <u>System Conditions</u>.

- a. Platform Release Variable 367. V367= X684'2
 This variable tests the value of Savex Cell X684 to determine, through remainder division by 2, if the last bit of the value is a "l" or a "O". When the last bit is a "l", it indicates that the IMU platform is released.
- b. Condition for Routine GMA Operation Variable 378 V378 = DFN (X682, V367) (matrix values) X682 is the Major Mode Savex Cell V367 is the Platform Release variable. This variable sets the condition that the routine GMA will operate only when the Major Mode is MATED-IDLE and the IMU platform has not been released.

5.2.4.3.2 Message Sources and Sinks.

Sinks for FF messages. The FF MDMs are Device numbers: 6009, 60010, 60011, and 60012. Message transmissions are sent to these devices by Variable 380.

V380 = P8 + 60008

P8 = Number of transmissions remaining for a message. 60008 = Device number used as an index for determining the device identification to which transmissions are to be sent.

- b. Sinks for FA Messages FA MDM Device numbers are: 60013, 60014, 60015, and 60016. Message transmissions are sent to these devices by Variable 381. V381 = P8 + 60012
- c. Sinks for DDU Messages. The device numbers of the DDU units are: 60017, 60018, and 60019. Message transmissions are sent to these units via Variable 382. V382 = P8 + 60016
- Sinks for ICC Messages ICC message Sinks will be GPC memory units which are identified in the model by the numbers 70001, 70002, 70003, and 70004. Messages to these units are sent via Variable 384. V384 = P8 + 70001
- Sources for ICC Messages The memory units 70001, 70002, 70003, and 70004 are both the source and sink for ICC messages. To control the source of these message transmission, the Variable 383 is used. V383 = P7 + 70001

P7 is the number of transmissions remaining for a message to be used for determining transmission sources.

5.2.4.3.3 Time Settings and Time Generation.

Set Time for Savex 681. - Variable 371.

V371 = V375 + V376

V375 = DFN (V372, V373) (matrix values) V376 = DFN (V374) (matrix values)

 $V372 = C^{1}80$

V373 = C1'320

V374 = C1'2000

Savex 681 indicates the processing time slice. Values for time slices of 40, 80, 160, 320, 1000, and 2000 are generated by performing remainder division of clock time (V372, V373, and V374) and by defining logical bit settings (V375 and V376) for the results, followed by combination of these results.

b. 80 MS Time Slice For some model routines a simple indicator of the presence or absence of the 80 ms time is required. This is accomplished via Variable 367. V367 = X681'2

Upon performing remainder division by 2, a result of 1 indicates an 80 ms time slice.

5.2.4.3.4 Task Branching.

a. Branching conditions for the User Interface Function - DMC. Branching to internal IMSIM locations is a function of the setting of Savex 685 (Keyboard and Application Control) and is defined by Variable 388 as follows:

```
V388 = DFN (X685)(
20090 1
20100 2
20150 3
20162 4
20181 5
20015 6)
```

b. Branching conditions for GUG tasks (Display Checkout Control) are required for numerical keyboard inputs. These branches to internal IMSIM locations are defined by Variable 389 as follows:

```
V389 - DFN (X699)(
20304 0
20410 10
20104 11
20130 12
20140 13
20104 16)
```

5.2.4.3.5 <u>Go/NoGo Settings</u>. Model variables V401 through V418 and V420 through V423 are used to establish Go or NoGo conditions for tasks. In all cases, this condition is accomplished via a corresponding IMSIM GATE.

Listed below are the Go/NoGo variables used in the model:

V401	=	G1501	V409	=	G1509	V417	=	G1517
V402	=	G1502	V410	=	G1510	V418	=	G1518
V403	=	GT 503	V411	=	G1511	V420	=	G1520
V404	=	G1504	V412	=	G1512	V421	=	G1521
V405	=	G1505	V413	=	G1513	V422	'4	G1522
V406	=	G1506	V414	=	G1514	V423	=	G1523
V407	=	G1507	V415	=	G1515			
V408	=	G1508	V416	=	G1516			

5.2.4.3.6 <u>Mass Memory Access Time</u>. Mass Memory access time is specified as having a range of 500 ms to 8000 ms. This condition is simulated by Variable 399.

V399 = X44 + V400

V400 = CFN (RFI) (Matrix Values)

%44 is a Savex constant of 500 ms.

V400 is a randomly generated value having a range of 0 to 7500 ms.

- 5.2.4.3.7 Memory Determination for each of the four Virtual Machines.
 - a. Variable 422 is used for the memory definition of each of the tasks. It is a function of the job, and the appropriate tasks are initiated in each of the four GPCs.

 V442 = X(V29) + 69999.
 - b. Memory Determination for ICC messages. Variable 384 is used for the memory determination of the ICC messages generated by each of the four GPCs. It is a function of the job number in each GPC.

V384 = DFN (X(V29))(70002 2 70003 3 70004 4 70001 5)

5.2.4.4 Savex Cells and Gates

5.2.4.4.1 <u>Savex Cell Utilization</u>. A group of Savex Cells has been designated and used for NASA-Unique conditional requirements, systems conditions, counters, and miscellaneous functions.

The utilization of these Savex Cells and the values associated with their use follows:

X638 - START TIME FOR UTILIZATION REPORTS

X639 - LIGHT OO = NO LIGHT ALARM

ALARM 01 = LIGHT ALARM EVENT

X640 - TIME MGT 00 = NOT ENABLED

O1 = TIME MANAGEMENT ENABLED

X641 - DOWNLIST 00 = NOT ENABLED

01 = DOWNLIST ENABLED

X642 - 40 MS TIME SLICE COUNTER

X643 - FUNCTION ABORT COUNTER

X656 - START TIME GROUP 1 FUNCTIONS (40 & 80 MS)

X657 - START TIME GROUP 2 FUNCTIONS (50, 100, 200 & 500 MS)

x658 - START TIME GROUP 3 FUNCTIONS (320 MS)

X659 - START TIME GROUP 4 FUNCTIONS (1000 & 2000 MS)

X660 - START TIME GROUP 5 FUNCTIONS (2 MS)

X681 - TIME SLICE 00000 = 40 MS

PROCESSING: 00001 = 80 MS

00010 = 160 MS

00100 = 320 MS

01000 = 1000 MS

10000 = 2000 MS

X682 - MAJOR 00 = NULL

MODES GN&C: 01 = PREFLIGHT PREP

10 = MATED IDLE

11 = MATED FLIGHT

12 = SEPARATION PRESEP

13 = SEPARATION POSTSEP

14 = TAEM

15 = APPROACH & LANDING

16 = ROLLOUT

x683 -

į

NAVIGA-

```
TIONAL
                       02 = AUTO-RY
          STATES:
                       03 = AUTO-BF
                       11 = CAS-P
                       12 = CAS-RY
                       13 = CAS-BF
                       21 = MD-P
                       22 = MD-RY
                       23 = MD - BF
X684 -
         FLIGHT
                       00000 =
         CONDITIONS:
                       00001 = IMU PLATFORM RELEASED
                       00010 = NWSE
                       00100 = WONG
                       01000 = WOWLON
                       10000 = FLAT TURN
X685 -
         KEYBRD &
                       01 = TERMINATE
                                               SPEC KEY
                       02 = IMU OPERATIONS
         APPLICAT.
                                               SPEC KEY
          CONTROL:
                       03 = FCS/DED.DISPL C.O SPEC KEY
                       04 = SPECIAL COMPUT
                                              SPEC KEY
                       05 = MODE CHANGE
                                              OPS KEY
                      06 = CLEAR
                                              NO SIM
                      07 = FAULT
                                              NO SIM
                      08 = RESUME
                                              SIM
                      09 = EXECUTE
                                              SIM
                       10 = PRO
                                              SIM
                       1I = ITEM
                                              SIM
                      12 = ACK
                                              NO SIM
                       13 = MSG RESET
                                              NO SIM
                       14 = RETURN
                                              NO SUPPORT
                      15 = CMPTR/CRT
                                              NO SIM
                      16 = CMPTR/BUS
                                              NO SIM
                       19 = DISPLAY
                                              SIM
                      20 = ENTER
                                              NO SIM
                      21 = TRANSFER
                                              NO SUPPORT
X687 -
         DISPLAY
                      00 = DISPLAY UPDATE
                      01 = NEW DISPLAY
                      01 = TRAJECTORY CAPTURE
X688 -
         A&L
          STATES:
                      02 = STEEP GLIDE SLOPE
                      03 = SHALLOW GLIDE SLOPE
                      04 = FINAL FLARE
```

01 = AUTO-P

X689 - MAJOR 00 = IDLE

MODES

01 = SYSTEM MONITOR

SM:

02 = PRE TAKE OFF

03 = SYSTEM MONITOR

04 = PRE DROP

05 = SYSTEM MONITOR

X695 - CURRENT MAJOR MODE SM

X696 - CURRENT MAJOR MODE GN&C

X697 - 50 MS TIME SLICE COUNTER: 1 - 10

X698 - TERMINATE OO = NO TERMINATE ACTION

INDICATOR: 01 = TERMINATE ACTION TAKEN

X699 - NUMERICAL KEYBOARD INPUTS: 1 - 99

X700 - 80 MS TIME SLICE COUNTER: 1 - 12

- 5.2.4.4.2 <u>Gate Utilization</u>. Gates 1501 through 1523 have been used as communication gates between the generated transactions and the prototype tasks to activate the proper tasks at the proper intervals. A gate setting of "1" will activate, whereas a setting of "0" specifies a "No-Go" condition. Gate 1551 has been used as the processing gate for S.M. data acquisition processing. A "1" setting provides processing. Gate 1552 has been used for a "Terminate" action for the various functions. Setting of this gate to "1" presents a "Terminate" condition for designated task.
- 5.2.4.5 <u>Parameterization</u>. The model has been parameterized with the parameters listed in Appendix B under NASA.SPECS10.DATA (for one Virtual Machine with four GPCs) and under NASA.SPECS20.DATA (for simulation with four Virtual Machines).

5.2.5 Model Execution (S.O.W. 2.1.5)

This section describes the work performed under task 2.1.5 as defined in the Statement of Work (Exhibit "A") of the contract.

- a. A battery of simulation runs was executed. The first set of runs was geared towards overall loading of the model and the cyclic execution of all its tasks. The runs went through the major phases of flight. Details of these simulation run executions are found in paragraph 5.2.5.1.
- b. The second set of runs was concentrated on peak loads developing during flight. Based on the cyclic nature of the software functions and the intervals between function executions, peak loading will occur every 16 seconds when all cyclic functions culminate and compete for the CPU, and every four seconds, when all but the 320 ms functions are activated. Details of these simulation run executions are found in paragraph 5.2.5.2
- c. A third set of runs was based on certain flight segments to determine if any bottlenecks would develop in any segment. Details of these simulation run executions are found in paragraph 5.2.5.3.
- d. A fourth set of runs was based on four separate Virtual Machines, with each GPC depicting one Virtual Machine. Details of these simulation run executions are found in paragraph 5.2.5.4. Software variations were made in the second, third, and fourth set of simulation runs, when the new operational System Logic as specified in the ALT Detailed Design Specification for FCOS, User Interface, and System Control was incorporated in the model specifications.

Hardware variations were based on the concepts of one Virtual Machine with the four GPCs operating in the redundant mode, versus four Virtual Machines each with one GPC. These variations were exercised within the second set and the fourth set of executed simulation runs.

In order to facilitate simulated situations that create peak loads, the start times of the cyclic functions were controlled in some sets of runs by the setting of Savex Cells 656 through 660 as indicated in Table 5-2. The functions were grouped together by cyclic intervals as follows:

Table 5-2. Function Grouping for Start Times

Group	Savex	Tasks	No.	Time Interval
A = 1	656	GEF	6	40
		AIE	7	40
		GAD	8	40
		GMA	9	40
		GEM	10	80
B = 2	657	SDM DA	11	50
		DCI	35	100
		DMI	32	200
		SDM PM	12	500
C = 3	658	GMG	19	320
D = 4	659	ARA	37	1000
		GEN	15	2000
E = 5	660	GTX	24	2
		GMX	22	2
<u> </u>		GMY	23	2
		GMT/U/V	21	2
		GMS	20	2
		DMC	34	2
1	1	SM OPS2	13	2
		SPM	14	2

The results of the model execution through the four sets of simulation runs are discussed in Section 2 - Results, Section 3 - Conclusions, and Section 5.2.6 - Test Analysis.

5.2.5.1 <u>Initial Set of Simulation Runs</u>. The first part of this set of runs was to validate the model. After the validation runs that exercised all modeled software and hardware, a time line, hereafter called a 'jobschedule' was developed that encompassed all major modes of flight, and started the second part of this set. The start time for the job was specified at 20 ms, at which time the IMSIM executive has completed its initiation cycle.

Specialist functions were fed in through the jobschedule at various subsequent times.

This jobschedule is given in Table 5.3. The first column in the table indicates the time (in milliseconds) at which the job or event is introduced to the system.

The second column specifies the job to be initiated. A zero in this column indicates that the next four fields are events to be set in Savex Cells (column 3 = Savex Cell number, column 4 = value to be set in this Savex, column 5 = 2nd Savex Cell number (if any), column 6 = value to be set in this 2nd Savex, if applicable).

Table 5.3. Jobschedule JSCA02

''JOBS	CHEDULI	: J	SCA02	
20	2			
20	0	682	1	''Preflight
150	0	685	3	''Display Checkout
150	0	699	2	-do
1000	0	682	9	''Mated Idle
1200	0	684	1	''IMU Released
1500	0	682	1	''Mated Flight
1800	0	682	1	''Presep
1900	0	683	2	''AUTO-RY
2100	0	682	1	''Postsep
2200	0	685	2	''IMU Ops
2201	0	699	10	''IMU Alignment
2300	0	685	2	''INU Ops
2301	0	699	12	''IMU Attitude
2400	0	683	10	''CAS-RY
3000	0	682	1	'TAEM
3200	0	683	11	" MD-BF
3250	0	682	1	''Approach & Landing
3300	0	684	10000	''Flat turn
3350	0	688	1	''Trajectory capture
3400	0	688	1	''Steep glide slope
3450	0	688	1	''Shallow glide slope
3500	0	688	1	''Final flare

Table 5-3 presents a time-sequenced list of this workload schedule. The job for the ALT Configuration of the Space Shuttle will start at time 20 (ms). At the same time, the Major Mode is set to "Preflight" by means of setting Savex Cell X682 to 1. At 150 ms the Display Checkout Specialist Function is selected by means of setting Savex Cell X685 to 3 and Savex Cell X699 to 2.

At 1 sec (1000 ms), the Major Mode is changed to "Mated Idle" by increasing X682 by 9. 200 ms later, the IMU Release is simulated (con*rolled by X584). At time 1500, the Major Mode changes to "Mated Flight" and at time 1800, to "Preseparation". The Navigational State is set to AUTO-RY at time 1900 by means of X683 and at time 2100, the "Postseparation" mode is entered. At time 2200 the IMU ops "IMU Alignment" is activated (X685 = 2 and X699 = 10), while 100 ms later the IMU ops "IMU Attitude" (X685 = 2, X699 = 12) is simulated. At time 2400, the Navigation State is changed to CAS-RY (X683 = 12). A change to Major Mode "TAEM" is activated at time 3000. During the last 500 ms, the Major Mode is changed to "Approach Landing". The Navigational State is changed, and the Trajectory Capture and Glide Slope is simulated.

In running with this jobschedule, it became apparent that between time 150 ms and 1000 ms, only the routine cyclic functions executed repeatedly without change in state. For analysis purposes, this was of little value. A more compacted time-line sequence of workload was constructed, thereby avoiding long segments of routine cyclic operations. This jobschedule then became the standard schedule used for the other runs in the previously defined first set of executed simulation runs (Table 5-4).

Table 5-4. Compacted Johschedule JSCA03

2	-	labie	5-4. C	ompacted	Jobschedule JSCA03
	''JOB	SCHEDU	LE	JSCA03	
	20	2			
۱	25	0	682	1	''PREFLIGHT
ļ	100	0	685	3	''DISPLAY CHECKOUT
1	100	0	6 9 9	2	'' -DO.
1	150	0	682	9	''MATED IDLE
1	200	0	684	1	''IMU RELEASED
ı	250	0	682	1	''MATED FLIGHT
ſ	450	0	682	1	''PRESEP
1	500	0	683	2	''AUTO-RY
1	550	0	682	1	'' OSTSEP
1	600	0	685	2	''IMU OPS
١	601	0	699	10	''IMU ALIGNMENT
1	650	0	685	2	''IMU OPS
ı	651	0	699	12	''IMU ATTITUDE
١	700	0	683	10	''CAS-RY
ł	750	0	682	1	' 'TAEM
١	800	0	683	11	'MD-BF
ı	850	0	682		''APPROACH & LANDING
ı	900	0		10000	''FLAT TURN
ļ	950	0	688	1	'TRAJECTORY CAPTURE
ļ	1000	0	688	1	''STEEP GLIDE SLOPE
ĺ	1050	0	688	1	''SHALLOW GLIDE SLOPE
1	1100	0	688	1	''FINAL FLARE
1	1200	0	682	1	'ROLLOUT
Į	1250	0	682	-6	''IDLE MODE

()

5.2.5.2 Concentrated Segment Runs. Simulation runs executed in this set were based on the theory that due to the cyclic nature of part of the Shuttle's functions, and the intervals between the cyclic execution of these functions, peak loads were developed at certain times.

Based on intervals of 40 ms, 50 ms, 80 ms, 100 ms, 200 ms, 320 ms, 500 ms, 1000 ms, and 2000 ms, this would occur at 4-second and 16-second intervals, when all cyclic functions would compete for usage of the CPU.

A timeline was developed that would simulate this situation. The jobschedule for this set of runs is given in Table 5-5. Flight state and conditions were preset at the start of these runs.

Table 5-5. Concentrated Jobschedule JSCA05

''JOBS(HEDU.	LE			ISCAO!	,
71095	2					''JOB START
72010	0	685	3	699	2	''FCS DISPLAYS
72050	0	685	5	683	1	''AUTO-RY
72075	0	685	2	699	10	''IMU OPS - ALIGNMENT
72125	0	685	5	689	1	''PREDROP MODE SM
72160	0	685	10	683	10	''CAS-RY
72200	0	685	2	699	13	''IMU OPS - CALIBRATION
72240	0	685	5	682	2	''TAEM MODE GN&C
72265	0	685	5	689	1	''SYSTEM MONITOR MODE SM
72290	0	685	5	683	-1	' CAS-P
72340	0	685	5	683	12	''MD-BF
72350	0	685	19	687	1	''INIT. AUTO-LAND DISPLAY
72375	0	685	5	682	1	''APPROACH & LANDING MODE GN&C
72390	0	685	10	683	-2	''MD-P
72410	0	684	10	0000		''FLAT TURN
72450	0	687		-1		''END AUTO-LAND DISPLAY
72500	0	684	-:	10000		"'END FLAT TURN
72510	0	688		1		'TRAJECTORY CAPTURE
72550	C	688		1		''STEEP GLIDE SLOPE
72575	0	687		1		''FIRST FLARE DISPLAY
72650	0	688		1		''SHALLOW GLIDE SLOPE
72675	0	687		-1		''END FIRST FLARE DISPLAY
72680	0	687		1		''PULL UP & FLARE DISPLAY
72700	0	688		1		''FINAL FLARE
72751)	0	684		1000		''WOWLON
72800	0	684		100		''WONG
72805	0	685	5	683	-18	''AUTO-BF
72875	0	685	5	682	-5	''IDLE MODE GN&C
72900	0	685	5	689	-5	''IDLE MODE SM

The preset conditions for this jobschedule were:

```
''START TIME FOR UTILIZATION REPORT
s \times 638 = 72000
                                   ''TIME MGT ENABLED
S \times 640 = 1
                                   ''DOWNLIST ENABLED
S \times 641 = 1
                             ''START TIME GROUP 1 TASKS
S \times 656 = 72000
                             ''START TIME GROUP 2 TASKS
S \times 657 = 72000
                             ''START TIME GROUP 3 TASKS
S \times 658 = /2000
                             ''START TIME GROUP 4 TASKS
S X659 = 72000
                             ''START TIME GROUP 5 TASKS
S X660 = 72000
S \times 682 = 12
                       ''PRESEP GN&C MODE
                       ''AUTO-P
S X683 = 1
                       ''IMU RELEASED
S X684 = 1
                       ''SYSTEM MONITOR SM MODE
S \times 689 = 3
                       ''PRESENT SM MODE
S \times 695 = 3
                       ''PRESENT GN&C MODE
S \times 696 = 12
```

One Specialist Function that was simulated at time 72200, viz. IMU calibration, in all probability would not be done in flight. Therefore, this jobschedule was changed to JSCA06 replacing this Specialist Function.

The new jobschedule JSCA06 is shown in Table 5-6.

Table 5-6. Concentrated Jobschedule JSCA06

71095	2					''JOB START
72010	ñ	685	3	699	2	''FCS DISPLAYS
72050	0	685	5	683	ī	''AUTO-RY
72075	Ö	685	2	699	10	''IMU OPS - ALIGNMENT
72125	0	685	5	689	1	''PREDROP MODE SM
72123	0	685	10	683	10	**CAS-RY
72200	0	685	2	699	12	''IMU OPS - ATTITUDE
72240	0	685	5	682	2	''TAEM MODE GN&C
72265	0	685	5 5	689	1	''SYSTEM MONITOR MODE SM
-	_	685	5		-1	''CAS-P
72290 72340	0	685	5 5	683	12	''MD-BF
72340	0	685	19	687	1	''INIT. AUTO-LAND DISPLAY
	_	685	19 5	682	1	''APPROACH & LANDING MODE GN&
72375	0	685	10	683	-2	1 MD-P
72390 72410	0	684		0000	-2	''FLAT TURN
	0	687	10	-1		''END AUTO-LAND DISPLAY
72450	0	684		10000		††END FLAT TURN
72500	0	688				'TRAJECTORY CAPTURE
72510	0			1 1		''STEEP GLIDE SLOPE
72550	0	688				'FIRST FLARE DISPLAY
72575	0	687		1 1		'SHALLOW GLIDE SLOPE
72650	0	688				''END FIRST FLARE DISPLAY
72675	0	687		-1		-
72680	0	687		1		''PULL UP & FLARE ! ISPLAY
72700	0	688		1		''FINAL FLARE
72750	0	684		1000		''WOWLON
72800	0	684	_	100		''WONG
72805	0	685	5		-18	
72875	0	685	5	-	-5	
72900	0	685	5	689	-5	''IDLE MODE SM

This jobschedule became the standard schedule for execution control in this set of tests.

Preset conditions for these runs were:

```
S X638 = 72000
                                ''START TIME FOR UTILIZATION REPORT
S X640 = 1
                                ''TIME MGT ENABLED
S X641 = 1
                                ''DOWNLIST ENABLED
                           ''START TIME GROUP 1 TASKS
S X656 = 72000
                           ''START TIME GROUP 2 TASKS
''START TIME GROUP 3 TASKS
S X657 = 72000
S \times 658 = 72000
                           ''START TIME GROUP 4 TASKS
S \times 659 = 72245
                           ''START TIME GROUP 5 TASKS
S X660 = 72000
S X682 = 12
                    ''PRESEP GN&C MODE
S X683 = 1
                    11AUTO-P
S X684 = 1
                    ''IMU RELEASED
S X689 = 3
                     ''SYSTEM MONITOR SM MODE
                    ''PRESENT SM MODE
S X695 = 3
S X696 = 12
                    ''PRESENT GN&C MODE
```

The jobschedule in Table 5-6 was also the basis for the variations in hardware from one Virtual Machine to four Virtual Machines.

5.2.5.3 ALT Flight Segment Runs. In addition to the runs described in paragraphs 5.2.5.1 and 5.2.5.2, jobschedules were developed for running particular flight segments. A timeline for this purpose is given in Table 5-7.

Table 5-7. Jobschedule JSCA07 for Flight Segments

31095				CA07		
	2					''JOB START
32010	0	685	3	699	2	''FCS DISPLAYS
32050	0	685	5	683	1	''AUTO-RY
32075	0	685	2	699	10	''IMU OPS - ALIGNMENT
32125	0	685	5	689	1	''PREDROP MODE SM
32160	0	685	10	683	10	''CAS-RY
32200	0	685	2	699	12	''IMU OPS - ATTITUDE
32240	0	685	5	682	1.	''SEP. MODE
32350	0	685	5	68ำ	1	''POST SEP.
32375	0	685	5	683	-1	'CAS-P
32400	0	685	5	689	1	''SYSTEM MONITOR MODE SM
32450	0	685	5	683	12	''MD-BF
32600	0	685	5	689	1	TTAEM

Preset conditions for these runs were:

```
S X640 = 1
                                 ''TIME MGT ENABLED
                                 ''DOWNLIST ENABLED
S \times 641 = 1
                           ''START TIME GROUP 1 TASKS
S X656 = 32000
                           ''START TIME GROUP 2 TASKS
S X657 = 32000
                           ''START TIME GROUP 3 TASKS
''START TIME GROUP 4 TASKS
S X658 = 32000
S \times 32245
S X660 = 32000
                           ''START TIME GROUP 5 TASKS
S X682 = 11
                           ''MATED FLIGHT
                    ''AUTO-P
S X683 = 1
                    ''IMU RELEASED
S X684 = 1
                    "'SYSTEM MONITOR SM MODE
S X689 = 3
S X695 = 3
                    ''PRESENT SM MODE
                    ''PRESENT GN&C MODE
S X696 = 11
```

5.2.5.4 <u>Multiple Virtual Machine Runs</u>. A set of simulation runs was executed in which each GPC was simulated as a separate virtual machine. All GPCs are active, but only one performs the actual message transmission to MDMs. All four virtual machines transmit and receive ICC messages. Specification File NASA.SPECS20.DATA was used for these runs.

The jobschedule developed for these runs is given in Table 5-8, with each Virtual Machine assigned its own job.

Table 5-8. Jobschedule JSCA08 for Four Virtual Machines.

11	_					Il ton oming non the t
71995	2					'JOB START FOR VM 1
71995	3					''JOB START FOR VM 2
71995	4					''JOB START FOR VM 3
71995	5				_	''JOB START FOR VM 4
72010	0	685	3	699	2	'FCS DISPLAYS
72050	0	685	5	683	1	' 'AUTO-RY
7 2075	0	685	2	699	10	'IMU OPS - ALIGNMENT
72125	0	685	5	689	1	''PREDROP MODE SM
72160	0	685	10	683	10	''CAS-RY
72200	0	685	2	699	12	''IMU OPS - ATTITUDE
72240	0	685	5	682	2	'TAEM MODE GN&C
72265	0	685	5	689	1	''SYSTEM MONITOR MODE SM
72290	0	685	5	683		'CAS-P
72340	0	685	5	683	12	¹ ¹MD-BF
72350	0	685	19	687	1	''INIT. AUTO-LAND DISPLAY
72375	0	685	5	682	1	'APPROACH & LANDING MODE GN&C
72390	0	685	10	683	-2	''MD-P
72410	0	684	10	0000		''FLAT TURN
72450	0	687		-1		"'END AUTO-LAND DISPLAY
72500	0	684	-	10000		"END FLAT TURN
72510	O.	688		1		'TRAJECTORY CAPTURE
72550	0	688		1		''STEEP GLIDE SLOPE
72575	0	687		1		''FIRST FLARE DISPLAY
72650	0	688		1		''SHALLOW GLIDE SLOPE
72675	0	687		-1		''END FIRST FLARE DISPLAY
72680	0	687		1		''PULL UP & FLARE DISPLAY
72700	O	688		1		''FINAL FLARE
72750	0	684		1000		''WOWLON
72800	0	684		100		' 'WONG
72805	0	685	5	683	-18	''AUTO-BF
72875	0	685	5	682	5	''IDLE MODE GN&C
72900	ō	685	5	689		
N	_	_				

Preset conditions for these runs were:

S X638 = 72000	''START TIME FOR UTILIZATION REPORT
S X640 = 1	''TIME MGT ENABLED
S X641 = 1	''DOWNLIST ENABLED
S X656 = 72000	''START TIME GROUP 1 TASKS
$S \times 657 = 72000$	''START TIME GROUP 2 TASKS
$S \times 658 = 72000$	''START TIME GROUP 3 TASKS
S X659 = 72245	''START TIME GROUP 4 TASKS
S X660 = 72000	''START TIME GROUP 5 TASKS
S X682 = 12	''PRESEP GN&C MODE
S X683 = 1	''AUTO-P
S X684 = 1	''IMU RELEASED
S X689 = 3	''SYSTEM MONITOR SM MODE
S X695 = 3	''PRESENT SM MODE
S X696 = 12	''PRESENT GN&C MODE

5.2.6 Test Analysis and Documentation (S.O.W. 2.1.6).

The following paragraphs describe in detail the work performed under this task. It included preparation of a draft Test Plan (Reference 5) which was submitted to NASA in January 1976, and which culminated in this Final Report.

5.2.6.1 <u>Simulation Results</u>. The simulation runs executed as described in paragraph 5.2.4 produced an abundance of results by means of history printouts and statistical reports.

A short description of these types of reports follows.

- a. Statistical Reports.

 For a quick analysis, 10 statistical reports were printed out at the end of each simulation run.
 - Job and Task Reports.
 Reports numbered 2 and 4 gave statistical data on the total number of jobs, tasks, and messages that are initiated, completed, interrupted, delayed, in progress, number of activations, etc.
 - Utilization Reports.
 Reports 13 through 18 provided statistical data for processors, memories storages, devices, data links, and data sets. These reports gave utilization of processors, devices, etc.; total usage, maximum and average times and rates.

Each prototype report was repeated for as many units as are specified on the input forms, e.g., one copy of report 16 for each central processor.

- Backlog Reports.
 Reports 20 and 21 provided the transaction backlog with maximum, average and current figures plus the average delay time in ms for the key blocks in the model.
- b. Data Flow Reports. These reports presented the activities that took place in the model during a simulation run. They are also considered to be history printouts.
 - Message Reports.
 Reports 5 and 6 gave all the particulars for each of the data flow messages, such as message length, origin (source), and destination (sink) of the data message, time of occurence, transmission rate, data bus number, etc.
 - 2. Job Reports. Reports 8 and 9 indicated at what time a job started and finished and total time consumed for job execution.
 - 3. Task Reports. Reports 25 through 28 and report 31 gave all details of task transactions during a run such as start and finish of a task, execution time, message wait, task interruption, computation time, etc.

c. Control Reports.

These reports were provided to detect situations in which capacities are exceeded or unusual activities take place. Report 12 gave a printout of errors occurring during a simulation run. Report 42 was used as a control tool to evaluate the various system capacities during a simulation run.

The report numbering is not sequential as numbered reports were changed, added, or deleted during previous versions of IMSIM.

Representative printouts of these reports followed concentrated simulation runs as defined in Section 5.2.5.2, and are given in Appendix D for the Statistical Reports and Control Reports, and in Appendix C for the Data Flow Reports that occurred during these simulation runs.

The results of the analysis of these runs and reports is given in Section 2 - Results, and in Section 3 - Conclusions, of this Final Report.

Some runs were plotted for easier analysis of delays and functional interruptions. Part of such a plot of a concentrated simulation run is given in Figure 2-2.

It is clear that every 40 ms the System Software Interface Processor and the Fast Cycle Executive interfere with each other as the Fast Cycle Executive gets interrupted every 40 ms time slice because of its lower priority. An offset timewise of 10 ms in every 40 ms cycle could solve this problem.

Lower priority tasks experience delays in their execution from 1 ms up to 58 ms (see Figure 2-3).

5.2.6.2 <u>Backlogs and Delays</u>. Many of the problems of congestion and contention for resources which are present in most data processing systems are automatically measured and reported during simulation runs using IMSIM. The DDPS design eliminates the possibility of a number of these problems. Furthermore, some of the measurements gathered by IMSIM relate directly to input specifications and parameters, and therefore provide no insight into the dynamic system behavior. Data which are meaningful in the context of DDPS simulation are extracted from the general simulation results and presented in Section 2. The following discussion pertains to the general results, as printed in reports 20 and 21, and may prove useful in indicating problems which the DDPS design has avoided or minimized.

Scheduled processes are essentially independent of each other (i.e., they are not organized in predecessor-successor relationships), so that backlogs of dependent tasks - measured in IMSIM block 1138 - do not develop.

Memory is allocated and programs and data loaded as required for major functions of the ALT, prior to the Mated/Drop Test. Thus, the nominal allocation activity - measured in IMSIM block 1151 - is not relevant to the DDPS model. For the same reason, the following measurements are not meaningful:

- a. the backlog of program elements which cannot be allocated due to lack of space in virtual memory block 1488
- b. program elements currently in loading block 1495
- c. executive (FCOS) service for loading of program elements block 1935

- d. time spent in consolidating virtual memory space block 1936
- e. the backlog of elements waiting for space in specific memory units block 6002
- f. the backlog of elements waiting for space in any memory units block 10052.

The time used by FCOS in activating processes is integrated with the scheduled processes, and job/task initiation service - measured by block 1204 - is bypassed.

The number of scheduled processes in the DDPS does not vary with time. Thus, block 1201, which measures the number of schedulable tasks, simply records the number of scheduled processes introduced to the model.

Statistics relating to processes in actual execution (i.e., having a CPU assigned) are recorded in two IMSIM blocks - block 1184 measures task execution with given computational values, while block 1192 measures execution with generated computation as needed to simulate production of output messages. Times recorded in these blocks are fragmented by task interruptions and thus indicate only the time periods continuously devoted to individual tasks. Data for these blocks, from various simulation runs, are shown in Appendix D.

Tasks which enter a "wait" state for completion of I/O are recorded in IMSIM block 1182. These data are presented for various simulation runs in Appendix D.

The DDPS is not configured as a multiprocessor (i.e., two or more CPUs cannot address the same main memory unit). IMSIM block 1185 records interference between processors in addressing the same memory; it has no useful information for the DDPS simulation.

The queue of processes that are ready for dispatching, either as the result of scheduling or as a consequence of interruption by higher priority processes, is represented by the backlog of tasks recorded in IMSIM block 3032. Data pertaining to this backlog for various simulation runs is shown in Appendix D.

So-called cyclic scheduling of IMSIM is not the same as the scheduling of cyclic processes within the DDPS. Rather, it refers to a "round robin" scheduling algorithm; since the latter is not simulated, the data pertaining to task queues for this type of scheduling - recorded in blocks 3004 and 3005 - are absent in summary printouts of DDPS simulation runs.

Task switchover time (i.e., the time it takes FCOS to store the status of an interrupted process and establish status for the interrupting task) is assumed to be well below the 1 ms threshold of time resolution, and statistics on switchover time - recorded in LaSIM block 3089 - are not significant.

As defined for IMSIM, "sink-driven" messages represent transmissions which are initiated in conjunction with task execution. If they are to be deferred until some time after the start of a task, a "start" specification is included in the message definition (IMSIM Form 5). IMSIM block 1605 records statistics

on message delays due to the start conditions. If a sequence of transmissions is defined as a sink-driven message, IMSIM block 1846 records statistics on the times between successive transmissions of the message. Sink-driven message transmissions are kept in synchronization with tasks as required and statistics on sync delays are recorded in block 1847; no such sync delays were recorded for DDPS transmissions.

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All DDPS processes are described as repeatable or "cyclic" tasks to IMSIM. Since block 1601 records data for noncyclic tasks, it has no function in the DDPS model.

Only response messages were characterized as "source-driven" for the DDPS model; this was done to achieve responses independently of process performance. Thus, statistics on source-driven message delays for transmission starts - recorded in blocks 1608 and 1851 - is irrelevant to the DDPS model. Response time is specified as an input parameter via IMSIM Form 5; statistics on response transmission response periods is recorded in block 1675.

Since the DDPS software is designed as a single, integrated unit, there is no need to employ the concept of "nonsharable" resources (i.e., resources such as bus terminals which must be reserved for use by a single task). Thus, backlog statistics on tasks which must acquire nonsharable resources - recorded in IMSIM blocks 1682 and 1686 - are not relevant.

Mass memory is not employed in the Mated/Drop Test simulation and since no other components of the DDPS are represented as auxiliary storage devices for data transmission, statistics relating to the use of such components - recorded in blocks 1706, 1707, and 1748 - are not relevant.

No statistics are recorded on I/O initiation and completion interrupt service, since these functions are incorporated in the software representation and are assumed to require negligible processor time (considering the 1 ms time resolution of the DDPS model); thus data on periods during which these functions are performed - recorded in blocks 1693 and 1808 - are absent.

Statistics were recorded in the backlogs which develop when message transmissions are deferred due to current use of a data bus or bus terminal required for the transmission. These data are recorded in blocks 1708, 1712, 1738, and 8005. No backlogs of this nature were observed in the DDPS simulation runs.

Since multiplexed transmission links are not employed in the DDPS model, statistics on acquisition of such links - recorded by block 1734 - are absent.

Statistics were gathered on transmission backlogs which develop as the result of I/O saturation of memory (i.e., a condition in which a sufficient portion of the memory access cycles are being utilized during a period to preclude additional, fixed-rate transmission). These data are recorded in blocks 1751 and 1753. No backlogs of this nature were observed in the DDPS simulation runs.

The IMSIM block 1754 records data concerning the transmission periods of all messages which are sent during a simulation run.

Reset periods for bus terminals were defined as zero, to represent negligible time periods. Thus, data gathered on device reset periods in IMSIM block 9052 are not meaningful.

5.2.6.3 Unresolved Problems. The results of this dynamic loading analysis study will be affected by the change in the logic for the Guidance, Navigation and Control functions. This change occurred with the release of new detailed GN&C data that were received in February 1976, after tasks I through 4 reached scheduled completion. Further effort is required to define the new requirements for those functions and to assess the impact on the Shuttle Orbiter DDPS by modeling these newly developed requirements (see Section 4.2, item b).

Completion of these activities will result in an effective augmentation of the recently completed ALT simulation analyses, and will supply a deeper insight into the feasibility of performing ALT functions under stress conditions.

- 5.2.6.4 <u>Documentation</u>. The documentation part of this task resulted in the following publications:
 - a. A draft Test Plan for DDPS Dynamic Loading Analysis, TM-(L)-5328/822/00 dated 15 December 1975.
 - b. Ten monthly Progress Reports, TM-(L)-5561/001/00 through TM-(L)-5561/010/00, issued at end of each month during the contract period (DRL Item No. 1).
 - c. A Final Report on DDPS Dynamic Loading Analysis, TM-(L)-5658/000/00 dated 30 April 1976 (DRL Item No. 2).

No related written or oral presentations at professional meetings or in professional journals were made in the course of this contract. Thus, no publications were made by SDC in conjuction with DRL Item No. 3, "Revision of Technical Information Releases".

APPENDIX A NASA.REVARIS.DATA

This Appendix provides the matrix values of the Variables, discussed in paragraphs 5.2.4.2 and 5.2.4.3, and the revisions, discussed in paragraph 5.2.4.1, which were used in the IMSIM O3B model.

```
NASA.REVAR15.DATA - 03/22/76
```

''COMP TIME FOR ROUTINE 301 V350 = (0.98 + V351 + V352) * 0.48

V351 =	DFN (X683,	X684)(
0.225	1	0
0.23	1	1
0.26	1	2
0.18	1	4
0.23	1	8
0.485	2	0
0.475	2	2
0.43	2	4
0.485	2	8
0.295	2	16
0	3	0
0.035	3	2
0	3	4
0.211	11	0
0.615	12	0
0.5	12	8
0.615	12	16
0	13	0
0.035	13	2
0	13	4
0.16	21	0
0.24	22	0
0	23	0)

V352 = DFN	(X681,	X682)(
0.31	0	Q
2,2	1	0
2.15	1	12
2.5	1	13
2.565	1	14
2.67	1	16
4.685	2	0
4.635	2	12
4.985	2	13
5.05	2	14
5,155	2	16
4.685	4	0
4.635	4	12

()

0.75

11)

```
4.985
                    13
            4
5.05
            4
                    14
5.155
            4
                    16
           8
1.0
                     0
           8
1.03
                    16
2.890
           9
                     0
2.840
           9
                    12
           9
                    13
3,19
3,255
           9
                    14
           9
3.39
                    16
5.375
          11
                     0
                    12
5.325
          11
5.675
          11
                    13
5.74
          11
                    14
5.875
          11
                    16
5.375
          15
                     0
5.325
          15
                    12
5.675
          15
                    13
5.74
          15
                    14
          15
5.875
                    16
2.89
          16
                     0
2.84
          16
                    12
          16
                    13
3.19
3,255
          16
                    14
3.39
          16
                    16
5.375
          19
                     0
5.325
          19
                    12
5.675
          19
                    13
5.74
          19
                    14
5.875
          19
                    16)
        ''COMP TIME FOR ROUTINE 309
V353 = DFN (X682)
2.88
            0
2.544
         10)
         "COMP TIME FOR ROUTINE 310
V354 = DFN (V366, X682)(
1.2
           0
                     0
0.84
           0
                    10
0.48
           1
                     0
0.408
           1
                    10)
         "COMP TIME FOR ROUTINE 42
V355 = 0.744 + (RF1) * 0.144
        ''COMP TIME FOR ROUTINE 45
V356 = 0.3456 + (RF1) * 0.0528
         ''COMP TIME FOR ROUTINE 308
V357 = (1.9 + V358) * 0.48
V358 = DFN (x682)
1.05
           0
```

```
V359 = DFN (X700)
     0
    0.0144
               6
               7
     0
    0.0144
              12)
        ''COMP TIME FOR ROUTINE 302
V360 = DFN (V366, V367)
     365
              0
              0
                    1
     363
     365
              1
                    1)
V361 = V(V360)
        ''COMP TIME FOR ROUTINE 303
V362 = (0.56 + (RF1) * 0.03) * 0.48
V363 = X73 - X73
        ''COMP TIME FOR ROUTINES 134 & 135
V364 = (0.5 + (RF1) * 30 + X44) * 0.48
V365 = V362 + V356 \div 0.3168
        ''80 MS TIMESLICE
V366 = X681'2
        ''PLATFORM RELEASE
V367 = X684'2
        ''COMP TIME FOR ROUTINE 306
V368 = (X44 + V369) * 0.48
V369 = DFN (X682)
     0.3
           0
     0.34
             10
     0.16
             15
     0.34
             16)
        ''COMP TIME FOR ROUTINE 307
V370 = V(V379)
        ''SET TIME FOR SAVEX 681
V371 = V375 + V376
V372 = C1^{1}80
V373 = C1^{\dagger}320
```

''COMP TIME FOR ROUTINE 31

```
V374 = C1^{\dagger}2000
V375 = DFN (V372, V373)
    111
              0
    001
              0
                     40
    011
              0
                    160
                    200
    001
              0
    000
              40
                      0)
V376 = DFN (V374)
   11000
             40
    1000
           1000
       0
           1040)
         ''SET TIME SLICE COUNTER X700
V377 = X700^{\dagger}12 + 1
         ''CONDITION FOR GMA OPERATION
V378 = DFN (X682, V367)
     1
              0
     0
              10
                     0
     1
              10
                     1)
         ''COMP TIME FOR ROUTINE 307
V379 = DFN (X682)
   363
              0
   393
              15)
         ''SINKS FOR FF MESSAGES
V380 = P8 + 60008
       ''SINKS FOR FA MESSAGES
V381 = P8 + 60012
       ''SINKS FOR DDU MESSAGES
V382 = P8 + 60016
       ''SOURCES FOR ICC MESSAGES
V383 = P7 + 70001
        ''SINKS FOR ICC MESSAGES
V384 = P8 + 70001
        ''NEW DISPLAY DETERMINATION
V385 = DFN (X685)
       0
               0
        1
               1
               6
        1
              19
```

```
0
             20)
        ''COMP TIME FOR ROUTINE 155
V386 = DFN (G1551)
     0.0024
                0
     0.096
                1)
        ''COMP TIME FOR ROUTINE 317
V387 = DFN (G1551)(
     0.0456
                0
     0.12
                1)
V388 = DFN (X685)(
     20090
               1
               2
     20100
     20150
               3
     20162
               4
     20181
               5
     20015
               6)
"BRANCHES FOR GUC TASKS
V389 = DFN (X699)(
    20104
               0
    20110
              10
    20104
              11
    20130
              12
              13
    20140
    20104
              16)
       ''COMP TIME FOR ROUTINE 304
V390 = (0.09 + V391) * 0.48
V391 = 0.01 + X687 * V392
V392 = DFN (X685, X682)
     0.38
              0
                     0
     0.345
              0
                    14
     0.375
              0
                    15
     0.385
              0
                    16
      0
              3
                    0
     0.38
              4
                     0
     0.345
              4
                    14
     0.375
              4
                    15
     0.385
                    16
     0.345
              5
                    14
     0.375
              5
                    15
     0.385
              5
                    16
      0
                     0)
```

^{&#}x27;'COMP TIME FOR ROUTINE 307

```
V393 = DFN (X688)
     0.0432
     0.0576
               3
     0.0384
               4)
        ''COMP TIME FOR ROUTINE 312
V394 = DFN (X700)
     0.25
               1
     0.075
               2
     0.116
               3
     0.316
               4
     0.105
               5
     0.098
               6
     0.238
               7
     0.129
               8
     0.128
               9
     0.22
              10
     0.093
              11
     0.154
              12)
        ''COMP TYME FOR ROUTINE 315
V395 = DFN (X682)
     0.15
               0
     0.085
              15)
        ''COMP TIME FOR ROUTINE 315
V396 = (5.986 + V367 * (V395 + 0.125)) * 0.48 + V367 * V362 + V390
        ''COMP TIME FOR ROUTINE 63
V397 = (V398 + X44) * 0.48
V398 = DFN (X685)(
    0.005
              1
    0.135
              2)
        ''MASS MEMORY ACCESS TIME
V399 = X44 + V400
V400 = CFN (RF1)
     0
              0
             0.1
   100
             0.2
   500
  1000
             0.3
  1600
             0.4
  2300
             0.5
  3100
             0.6
             0.7
  4000
  5000
             0.8
  6200
             0.9
```

```
7500
             0.99)
       ''GO/NO GO SETTING TASKS
V401 = G1501
V402 = G1502
V403 = G1503
V404 = G1504
V405 = G1505
V406 = G1506
V407 = G1507
V408 = G1508
V409 = G1509
V410 = G1510
V411 = G1511
V412 = G1512
V413 = G1513
V414 = G1514
V415 = G1515
V416 = G1516
V417 = G1517
V418 = G1518
V419 = DFN (X698, X682)
   1
            0
   0
                    2)
V420 = G1520
V421 = G1521
V422 = G1522
V423 = G1523
      ''TIME SLICE COUNTER FOR DATA ACQ
V424 = X697'10 + 1
      ''COMP TIME FOR ROUTINE 316
V425 = DFN (X685)(
     0.0624
     0.1536
              4
     0.0624
              5)
      ''FOR GATE SETTING PROC BUFFER
V427 = DFN (RF1)
      1
            0.0
      0
            0.75)
      ''COMP TIME FOR ROUTINE 312
V428 = V394 * 0.48
      ''COMP AS FN (40MS CTR) ROUTINES 140 & 151
V429 = (1 - X642'X45/(X642'X45)) * X44
```

```
''COMP TIME FOR ROUTINE 140
V430 = V429 * X639
      ''COMP TIME FOR ROUTINE 313
V431 = DFN (X685)
     1.56
                       ''SPEC
                      ''OPS
     1.204
              5
            -
8
                       ''RESUME
     2.51
     0.396 9
                       ''EXEC & PRO
     0.662 11
                       ''ITEM
                      ''DISPLAY
     2.51
            19)
     ''COMP TIME FOR ROUTINE 149
V432 = DFN (X685)
     0.384
     1.104
               1)
      ''MSG LENGTH FOR DEU DISPLAY IMAGE
V433 = DFN (X685)
     0
              0
    1024
              1
     0
    1024
             19
     0
             20)
      ''MSG LENGTH FOR KEYBD INP
V434 = DFN (X685)
     0
              0
     10
              1)
       ''COMP TIME FOR ROUTINE 314
V435 = X44*3 + X45*X687
      ''ADDITION FOR COUNTER X643
V436 = X577$X577
      '' CONDITIONS FOR OPERATION OF GEF AND GAD
V437 = DFN (X682)
     1503
             0
      1501
             11)
V438 = DFN (X682)
      8
              0
       6
             11)
      ''CONDITION FOR CLEARING X699 KEYBD INPUT
V439 = X699 * X698
      ''CHECK FOR SPEC TERMINATE ACTION
V440 = DFN (X699)
```

```
20105
               0
     20150
               2
     20105
               3
     20110
              10
     20105
              11
     20130
              12
     20140
              13
     20105
              16)
      ''CONDITION FOR GEN OPERATION
V441 = DFN (X682, V367)
      0
             0
                    0
      1
            14
                    1
            15
      0
                    0)
     ''IMSIM REVISIONS
V9 = FT(IC2)/(C1 - X638)*100$1
V109 = DFN (X(V47) X(V42))(1 0 0 0 0 1 1 1 0)
V232 = (C1 - X638)*X90/1000
V306 = B1192 + B1184
V442 = X(V29) + 69999
20000 GEN 40 0
                     X656
                            0 42
     X642 + 1
                           ''40 MS PULSE COUNTER
     X681 = V371
                           ''SET TIME SLICE
     ADMIT IF X577 = 0
     P3 = 1502
     P4 = 7
                            ''SYST SW INTERF PROC - AIE
     COPY TO 20013
     P3 = 1504
     P4 = 9
                            ''MINOR CYCLE EXEC - GMA
     COPY TO 20013 V378
     P3 = V437
     P4 = V438
                            ''FAST CYCLE EXEC - GEF OR MF/D IDLE MODE - GAD
     TRY 20013
20010 GEN 80
                 0
                     X656
                               40
                            ''TIME SLICE COUNTER
     X700 = V377
1 1
     P3 = 1507
1 1
     P4 = 18
                          'PREFLIGHT EXEC - GEP
      COPY TO 20013
20011 DETOUR 20015
     ADMIT IF X682 GE 11
     ADMIT IF X577 = 0
     P3 = 1505
     P4 = 10
                           ''MATED DROP EXEC - GEM
20013 G(P3) = 1
     X577 = P4
     PR1 + 0
```

```
G(P3) = 0
     PRINT R 30 30
     X643 + V436
     x577 = 0
20015 REMOVE
20020 GEN 100 0 X657
                           0
                               40
     ADMIT IF X577 = 0
     P3 = 1517
     P4 = 35
                           ''CYCLIC DISPLAY PROC - DCI
     TRY 20013
20030 GEN 320
               0 X658
                               40
     ADMIT IF X577 = 0
     P3 = 1508
     P4 = 19
                           ''MAJOR CYCLE EXEC - GMG
     COPY TO V440
     TRY 20013
20040 GEN 200 0 X657
                                40
      ADMIT IF x577 = 0
     P3 = 1514
     P4 = 32
                           ''MCDS INPUT PROC - DMI
      TRY 20013
20050 GEN 1000 0 X659 0
                             40
      ADMIT IF X577 = 0
     P3 = 1518
     P4 = 37
                           ''GPC SWITCH MONITOR - ARA
      TRY 20013
20060 GEN 2000 0 X659 0
                             40
      ADMIT IF X577 = 0
      P3 = 1506
      P4 = 15
                           ''TAEM NAV CYCLIC EXEC - GEN
      COPY TO 20013 V441
      TRY 20105
20070 GEN
           2
                                 41
                0
                     X660
                            0
      ADMIT IF X685 GQ 1
     ADMIT IF X577 = 0
                           ''USER INTERFACE - DMC
      X577 = 34
      G1516 = 1
     PR1 + 0
     G1516 = 0
20071 PRINT R 30 30
     X643 + V436
      x577 = 0
20072 DELAY 1
      COPY TO V388
      X685 = 0
      X687 = V385
      REMOVE
''20080 GEN 100
                   0 X657
                                  40
     ADMIT IF V419 = 1
''20081 ADMIT IF X577 = 0
```

```
† T
      P3 = 1515
TF
      P4 = 33
                           ''LDB I/O PROC - DGI
1 1
      TRY 20013
20090 \times 698 = 1
      TRY 20105
20100 TRY V389
20104 G(P3) = 1
      X577 = P4
      PR1 + 0
      G(P3) = 0
20106 PRINT R 30 30
      X643 + V436
      X577 = 0
      X699 - V439
      x698 = 0
20105 REMOVE
20110 \text{ G}1511 = 1
      X577 = 22
                           ''IMU GYROCOMPASS ALIGNMT - GMX
      PR1 + 0
      G1511 = 0
      ADMIT IF X577 = 0
20112 P3 = 1512
      P4 = 23
                            ''IMU VELOCITY & TILT - GMY
      TRY 20104
20130 P3 = 1509
      P4 = 20
                            ''IMU ATTITUDE DETERM - GMS
      TRY 20104
20140 P3 = 1510
      P4 = 21
                            ''IMU CALIBRATION - GMT, GMU, GMV
      TRY 20104
20150 DETOUR 20015
      ADMIT IF x699 = 2
20151 P3 = 1513
      P4 = 24
                            ''FCS/DD DEDICATED DISPLAY CH.OUT - GTX
      TRY 20104
20160 GEN 50 0 X657 0 40
      X697 = V424
                           "SET TIME SLICE
                            ''SET GATE PROC BUFFER
      G1551 = V427
20161 \text{ ADMIT IF } x577 = 0
      P3 = 1520
      P4 = 11
                            ''SM DATA ACQ
      TRY 20013
20162 G1551 = 1
      TRY 20161
20170 GEN 500 0 X657 0 40
      ADMIT IF X697 = I
                          ''ONCE EVERY 10 CYCLES
      ADMIT IF X577 = 0
      P3 = 1521
      P4 = 12
                            ''SM PERFORM MONITOR
      TRY 20013
```

there were the relation of a contract of the contract of the con-

```
20180 GEN
           2 0 X660 0 41
20181 ADMIT IF X682 NE X696
     X696 = X682
20182 \text{ ADMIT IF } X577 = 0
     P3 = 1522
                          ''SM OPS 2
      P4 = 13
      TRY 20013
20185 GEN 2 0 X660 0 41
      ADMIT IF X689 NE X695
      X695 = X689
      TRY 20182
20190 GEN
          2 0 x660 0 40
      ADMIT IF X685 NE O
      ADMIT IF X577 \approx 0
      P3 = 1523
      P4 = 14
                          ''SPM SUBSYSTEM MONITOR
      TRY 20013
REPORT 2 1 1
DURING V232
                SECONDS OF SIMULATED SHUTTLE OPERATIONS
 A TOTAL OF BW1160 DIFFERENT FUNCTIONS WERE INTRODUCED.
 THESE FUNCTIONS WERE ACTIVATED BW1166 TIMES, STATUS IS:
       BW1196 WERE COMPLETED
        B1167 ARE WAITING FOR NEXT ACTIVATION
        B3032 ARE IN READY STATE, I.E. WAITING FOR CPU
        B1182 ARE WAITING FOR MESSAGES TO COMPLETE
         V306 PRESENTLY EXECUTING, I.E. IN ACTIVE STATE
 FUNCTIONS WERE INTERRUPTED BW2000 TIMES.
 X643 FUNCTION ACTIVATIONS WERE ABORTED AS FUNCTION STILL ACTIVE. ENDR
REPORT 3 1 1 0
NOT APPLICABLE FOR NASA. ENDR
REPORT 30 1 1 X577
 AT TIME
             C1 ACTIVATION FOR FUNCTION X577 ABORTED, AS
 FUNCTION X577 IS STILL ACTIVE. ENDR
REVISE 39000 39000
                                         "'SPEED-UP BY ELIMINATING PROTOTYPES
REVISE 238000 238000
                                ''SET SAVEX FROM JOBSCHEDULE
1010 DETOUR 1012
      ADMIT IF P2 = 0
      X(P3) + P4
      DETOUR 30012
      ADMIT IF PL1 GR 0
      SAVE P5
30010 X(P6) + P7
      POP
      POP
      DETOUR 30010
      ADMIT IF PL1 = 0
30012 REMOVE
1012 P2 = V153
```

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REVISE 649000 661000

TRY 1352

''SPEED-UP BY ELIMINATING V.M. & MEM.RECO

REVISE 663000 680000

X(V67) = 1

''SPEED-UP BY ELIMIN. V.M. & MEMORY RECORDING

"'SUPPRESS ZERO LENGTH TRANSMISSION

REVISE 881000 881000

''SUPPRESS ZERO LENGTH TRANSMISSION

DETOUR 1606

ADMIT IF P3 = 0

POP P2

TRY 1865

1606 P2 = P6

REVISE 1134000 1134000

ADMIT IF X(P2) = 1

SOURCE PRIMARY

END OF DATA

''PREVENT COMP TIME FROM MESSAGES



APPENDIX B NASA.SPECS20.DATA

11	MAG	ለ ሮ ፱፫ሮሮያስ ከለሞለ	- 03/27	176			00000010						
11	NASA, 51 EG320. DATA - 05/21/10												
1.1	SIMULATION SPECIFICATIONS FOR SPACE SHUTTLE ORBITER												
1.1		- 			TITE OKDIIEK		00000030 00000040						
11	ONDOMED DATA INCOMMENTAL												
11													
11	INOUNCED BY THE CIVILLY PRADMITIMAL CONTINUE												
11	prita and indicated on indication reading to become in												
	SDC PUBLICATION TM-5328/102, "IMSIM INFORMATION MANAGEMENT SYSTEM												
	'' SIMULATOR USER'S MANUAL".												
	!! !!! 7070												
	''**** JOBS ************************************												
1.1							00000130						
1 1		IVE JOBS ARE IN					00000140						
1 1	S	IMULATION EXECU	CIVE. JO	3S 2 THROUG	H 5 ENCOMPASS	\mathtt{ALL}	00000150						
Ŧ T		UNCTIONS OF THE					00000160						
1 1	J	OB 2 REPRESENTS	THE WORK	LOAD FOR GP	C 1,		00000170						
1 7	J	OB 3 REPRESENTS	THE WORK	LOAD FOR GP	C 2, ETC.		00000180						
T T							00000190						
TT	JOB	TASK	PRIO	RITY	NATURE	GO/NOGO	00000200						
7 7			RELATIVE	ABSOLUTE	(CYCLIC)	VARIABLE	00000210						
7 7		CEF		28			00000220						
1	2	6	8		2	401	00000230						
1 1		AIE		29			00000240						
1	2	7	9		2	402	00000250						
11	-	GAD	-	26	_		00000260						
1	2	8	6		2	403	00000270						
T T	_	GMA	•	27	_		00000280						
1	2	9	7		2	404	00000290						
11	_	GEM	•	24	_	,	00000300						
1	2	10	4	- .	2	405	00000310						
7 7	_	SDA	•	25	-	,00	00000320						
1	2	11	5	23	2	420	00000330						
11	_	SDM	,	5	_	,20	00000340						
1	2	12	5	_	2	421	00000350						
11	_	SFO	,	25		722	00000360						
1	2	13	5	-5	2	422	00000370						
1 1	-	SPM	•	25	4	425	00000370						
1	2	14	5	2.5	2	423	00000390						
11	2	GEN	,	7	4-	423	00000400						
1	2	15	7	,	2	406	00000410						
11	~	GMG	•	6	4	400	00000410						
1	2	19	6	U	2	408	00000420						
11	2	GMS	U	1	2	400	00000430						
1	2	20	1	ı	2	409	00000440						
1 1	4			3	2	407	00000450						
	2	GMT,GMU,GI 21		3	2	410	00000480						
1	2		3	0	Z	410							
	0	GMX	0	2	•	4.1.1	00000480						
1	2	22	2	~	2	411	00000490						
		GMY		5			00000500						

				,			
1	2	23	5		2	412	00000510
1.1	_	GTX	_	4			00000520
1	2	24	4		2	413	00000530
1 1	_	DMI		25			00000540
1	2	32	5		2	414	00000550
1 1	_	DMC	•	23			00000560
1	2	34	3		2	416	00000570
1 1	_	DCI		21			00000580
1	2	35	1		2	417	00000590
11	·	ARA		9			00000600
1	2	37	9		2	418	00000610
11	_		-				00000620
1 1		GEF		28			00000630
1	3	106	8		2	401	00000640
11	•	AIE	-	29			00000650
1	3	107	9		2	402	00000660
t 1	-	GAD	-	26			00000670
1	3	8	6		2	403	00000680
11	_	GMA		27			00000690
1	3	9	7		2	404	00000700
+ 1	-	GEM		24			00000710
1	3	10	4		2	405	00000720
1 1		SDA		25			00000730
1	3	111	5		2	420	00000740
7.7		SDM		5			00000750
1	3	12	5		2	421	00000760
T T		SFO		25			00000770
1	3	13	5		2	422	00000780
1.1		SPM		25			00000790
1	3	14	5		2	423	0080000
11		GEN		7			00000810
1	3	15	7		2	406	00000820
1 1		GMG		6			00000830
1	3	19	6		2	408	00000840
1 1		GMS		1			00000850
1	3	20	1		2	409	00000860
1.1		GMT,GMU,GMV		3			00000870
1	3	21	3		2	410	0880000
T 1		GMX		2			00000890
1	3	22	2		2	411	00000900
11		GMY		5			00000910
1	3	23	5		2	412	00000920
1.1		GTX		4			00000930
1	3	24	4		2	413	00000940
7 1		DMI		25			00000950
1	3	32	5		2	414	00000960
7 1		DMC		23			00000970
1	3	134	3		2	416	00000980
7 1		DCI		21			00000990
1	3	135	1		2	417	00001000

1 1		ARA		9			00001010
1	3	37	9		2	418	00001020
11							00001030
11		GEF		28			00001040
1	4	106	8		2	401	00001050
1 1		AIE		29			00001060
1	4	107	9		2	402	00001070
11		GAD		26			00001080
1	4	8	6		2	403	00001090
1 1		GMA		27			0001100
1	4	9	7		2	404	00001110
1 1		GEM		24			00001120
1	4	10	4		2	405	00001130
1 1		SDA		25			00001140
1	4	111	5		2	420	00001150
T 1		SDM		5			00001160
1	4	12	5		2	421	00001170
11		SF0		25			00001180
1	4	13	5	_	2	422	00001190
7 7		SPM		25			00001200
1	4	14	5		2	423	00001210
		GEN	_	7	_		00001220
1	4	15	7		2	406	00001230
	,	GMG	_	6	_		00001240
1	4	19	6	_	2	408	00001250
	,	GMS		1	_		00001260
1	4	20	1		2	409	00001270
	,	GMT,GMU,GMV		3	_		00001280
1	4	21	3	•	2	410	00001290
	4	GMX		2	•		00001300
1	4	22	2	r -	2	411	00001310
		GMY	-	5	•	410	00001320
1	4	23	5	,	2	412	00001330
1	4	GTX 24	ı.	4	2	/12	00001340
7 T	4	DMI	4	25	2	413	00001350
1	4	32	5	25	2	111	00001360
11	4	DMC	3	ů o	2	414	00001370
1	4	134	3	23	2	416	00001380
11	4	DCI	3	21	2	416	00001390
1	4	135	1	21	2	417	00001400
11	7	ARA	1	9	2	417	00001410 00001420
1	4	37	9	7	2	418	00001420
11	7	3,	,		2	410	
1.1		GEF		28			00001440 00001450
1	5	106	8	20	2	401	00001450
11	,	AIE	J	29	۷.	401	00001480
1	5	107	9	23	2	402	00001470
t t	,	GAD CAD	,	26	~	402	00001480
1	5	8 8	6	20	2	403	00001490
_	,	U	U		۷.	400	000(,100)

1 7		GMA		27					00001510
1	5	9	7		:	2	40	4	00001520
T T		GEM		24					00001530
1	5	10	4			2	40.	5	00001540
7 T		SDA		25					00001550
1	5	111	5			2	42	0	00001560
1 1	_	SDM		5					00001570
1	5	12	5			2	42	1	00001580
1.1	_	SFO		25					00001590
1	5	13	5			2	42.	2	00001600
11	_	SPM	-	25					00001610
1	5	14	5			2	42	3	00001620
11	-	GEN	•	7					00001630
1	5	15	7	•		2	40	6	00001640
11	_	GMG	•	6		_		_	00001650
1	5	19	6	•		2	40	8	00001660
11	,	GMS	Ū	1		_		_	00001670
1	5	20	1	•		2	40	9	00001680
11	,	GMT,GMU,GMV	•	3		_			00001690
1	5	21	3	J		2	41	n	00001700
11	,	GMX		2		_		•	00001710
1	5	22	2	_		2	41	1	00001720
1 1	,	GMY	_	5		-	• •	_	00001730
1	5	23	5	,		2	41.	2	00001740
1 1	,	GTX		4		_		_	00001750
1	5	24	4	7		2	41	3	00001760
11		DMI	7	25		_	•-	•	00001770
1	5	32	5	23		2	41	4	00001780
1 1	,	DMC		23		-	7.	•	00001790
1	5	134	3	2.7		2	41	6	00001800
5 T	,	DCI	,	21		_	-, -	•	00001810
1	5	135	1	4-		2	41	7	00001820
11	,	ARA	-	9		-		•	00001830
1	5	37	9	,		2	41	8	00001840
11	,	37				_	,-	_	00001850
11%	***	TASKS *********	*****	*****	*****	****	****	*****	00001860
1.1	•								00001870
1 7	,	TASKS 1 THROUGH 6 A	RE RESE	RVED FOR	THE SIM	III.ATTON	EXECUT	IVE.	00001880
7 7		TASKS NUMBERED ABOV							00001890
1.1			<u> </u>						00001900
116	भ प्रम	C EXEC FAST CYCLE	EXECUT	TVF.					00001910
		JLED AT 40MS INTERV			7) AND	GAA (20	016)		00001920
11	OIII.D.	CLASS DELAY		IRED ELEM		,	,		00001930
2	6	1 0	3008		50006	50007	50008	50009 *	00001940
-	-		5001		50012	50013	50014		00001950
			5001		50018	50019	50020		00001960
			5002		50024	50025		_	00001970
			5005		50052	50053	50054	1	00001980
2	106	1 0	3008		1				00001990
11	_00	• •	3000		_				00002000

''AIE SIP SYSTEM SOFTWARE INTERFACE PROCESSOR	00002010
'SCHEDULED AT 40MS INTERVALS BY SYSTEM INITIALIZATION	00002020
CLASS DELAY REQUIRED ELEMENTS	00002030
2 7 1 0 30116 30130 30138 30147 50028	
50058 30151 30140 1	00002050
	* 00002060
50028 1	00002070
11	00002080
''GAD MATE IDLE MATED/DROP TEST IDLE MODE - 200	00002090
'SCHEDULED AT 40MS INTERVALS BY GAA (20016) UNTIL MODE TRANSITION	
'' CLASS DELAY REQUIRED ELEMENTS	00002110
2 8 1 0 30302 30303 30045 30089 1	00002120
tt	00002130
''GMA MIN EXEC MINOR CYCLE EXECUTIVE	00002140
''SCHEDULED AT 40MS INTERVALS BY GAV (20017). IF MODE 200 IS	00002150
''ENTERED WHILE PLATFORM IS NOT RELEASED, GMA IS CANCELLED AND THEN	00002160
'RESCHEDULED AT MODE TRANSITION.	00002170
'' CLASS DELAY REQUIRED ELEMENTS	00002180
2 9 1 0 30042 30303 30045 1	00002190
11	00002200
''GEM MATE DROP EXEC MATED/DROP EXECUTIVE	00002210
''SCHEDULED AT 80MS INTERVALS BY GAA (20016) FOR MODE 201. IF MODE	00002220
''200 IS ENTERED, GEM IS CANCELLED.	00002230
'' CLASS DELAY REQUIRED ELEMENTS	00002240
·	* 00002250
30307 30312 30031 30315 1	00002260
11	00002270
''SDA DATA ACQUISITION SM DATA ACQUISITION	00002280
''SCHEDULED AT 50MS INTERVALS BY SM OPS I	00002290
'' CLASS DELAY REQUIRED ELEMENTS	00002300
2 11 1 0 30155 50032 50033 1	00002310
2 111 1 0 30155 1	00002320
11	00002330
''SDM PERFORM MON CONTROL SM PERFORMANCE MONITORING CONTROL	00002340
''SCHEDULED AT 500MS INTERVALS BY SM OPS 1	00002350
'' CLASS DELAY REQUIRED ELEMENTS	00002360
2 12 5 0 30316 30317 1	00002370
t t	00002380
'' SFO FLIGHT OPS SM FLIGHT OPERATIONAL SEQUENCE (OPS 2)	00002390
''SCHEDULED BY UI SOFTWARE (20034)	00002400
CLASS DELAY REQUIRED ELEMENTS	00002410
2 13 1 0 30157 30316 1	00002420
tt.	00002430
''SPM SUBSYS CONFIG MON SM SUBSYSTEM CONFIGURATION MONITORING	60002440
''PRETAKEOFF & PREDROP SM SPECS SCHEDULED BY UI SOFTWARE (20034)	00002450
'' CLASS DELAY REQUIRED ELEMENTS	00002460
2 14 1 0 30157 I	00002470
11	00002480
''GEN TAEM NAV CYC TAEM NAVIGATION CYCLIC EXECUTIVE	00002490
''SCHEDULED AT 2000MS INTERVALS BY SPEC GUC (20027) UPON PLATFORM	00002500

''RELEASE R	FOURST			00002510
	-	DELAY	REQUIRED ELEMENTS	00002520
2 15	5		30306 30308 1	00002520
11	J	U	70700 70700 7	00002540
TICAA ODCO	MATED DDA	ነው ጥፑርጥ	MATED/DROP OPS CONTROL SEGMENT	00002550
''SCHEDULED				00002560
''SERVICE L		•	· ·	00002570
			REQUIRED ELEMENTS	00002570
'' 16	LASS I	0	KEQUIKED EPERENIS	00002500
11	1	U		00002550
	יים דילו ידונוו	nneer ten	TO ONE COMPROI SPEMENT	00002610
''GAV_OPS1_ ''SCHEDULED			T OPS CONTROL SEGMENT	00002010
				00002620
			IBLE. LOGIC SIMULATED.	00002630
t			REQUIRED ELEMENTS	00002640
17	1	0	30004	
		DD 900 TOU	m nypovmitin	00002660
'GEP_PRE_F			T EXECUTIVE	00002670
			BY GAV (20017) WHILE IN MODE 101	00002680
''NOT ACTIV		•		00002690
			REQUIRED ELEMENTS	00002700
11 18	1	0	30304 30029 30312 30315 1	00002710
		_	,	00002720
''GMG_MAJ_E			CLE EXECUTIVE	00002730
			S BY GMU/GMT/GMV (20021), GMX (20022),	00002740
		GMS (20020), ALL OF WHICH ARE SCHEDULED BY	00002750
''SPEC GUC	-			00002760
			REQUIRED ELEMENTS	00002770
2 19	5	0	30309 30305 1	00002780
† †				00002790
''GMS_IMU_A			DETERMINATION	00002800
''SCHEDULED		•		00002810
			REQUIRED ELEMENTS	00002820
2 20	5	0	30310 1	00002830
1 T				00002840
			HT CALIBRATION A	00002850
''GMU_HANG_			CALIBRATION A	00002860
''GMV_HANG_			CALIBRATION B	00002870
''SCHEDULED				00002880
			REQUIRED ELEMENTS	00002890
2 21	5	0	30311 1	00002900
T 7				00002910
''GMX_GC_AL			ASS ALIGNMENT	00002920
''SCHEDULED		•		00002930
			REQUIRED ELEMENTS	00002940
2 22	5	0	30062 1	00002950
11				00002960
''GMY_VEL_T			AND TILT	00002970
		•	FOLLOW GMX (20022)	00002980
		DELAY	REQUIRED ELEMENTS	00002990
2 23	5	0	30063 1	00003000

11	00003010
''GTX DD CKOUT FCS/DD DEDICATED DISPLAY CHECKOUT	00003020
''SCHEDULED BY GUG (20028)	00003030
'' CLASS DELAY REQUIRED ELEMENTS	00003040
2 24 5 0 30113 1	00003050
11	00003050
''GUA HORIZ SIT HORIZONTAL SITUATION CONTROL SEGMENT (SPEC)	00003070
''SCHEDULED BY UI SOFTWARE (20034)	00003080
''SERVICE LOAD ASSUMED NEGLIGIBLE. LOGIC SIMULATED.	00003090
'' CLASS DELAY REQUIRED ELEMENTS	00003100
25 1 0 30105	00003110
11	00003120
''GUB_VERT_SIT VERTICAL SITUATION CONTROL SEGMENT (SPEC)	00003130
''SCHEDULED BY UI SOFTWARE (20034)	00003140
''SERVICE LOAD ASSUMED NEGLIGIBLE. LOGIC SIMULATED.	00003150
'' CLASS DELAY REQUIRED ELEMENTS	00003160
71 26 1 0 30106	00003170
11	00003180
''GUC IMU OPRTNS IMU OPERATION CONTROL SEGMENT (SPEC)	00003190
''SCHEDULED BY UI SOFTWARE (20034)	00003200
''SERVICE LOAD ASSUMED NEGLIGIBLE. LOGIC SIMULATED.	00003200
CEASS DECAL REQUIRED EXEMENTS	00003220
7 27 1 0 30107	00003230
	00003240
''GUG_FCS_DD_CKOUT FCS/DED. DISPLAY CHECKOUT CONTROL SEGMENT (
''SCHEDULED BY UI SOFTWARE (20034)	00003260
'SERVICE LOAD ASSUMED NEGLIGIBLE. LOGIC SIMULATED.	00003270
CLASS DELAY REQUIRED ELEMENTS	00003280
11 28 1 0 30108	00003290
11	00003300
''GUH RM NAV RM-NAV CONTROL SEGMENT (SPEC)	00003310
''SCHEDULED BY UI SOFTWARE (20034)	00003320
''SERVICE LOAD ASSUMED NEGLIGIBLE. LOGIC SIMULATED.	00003330
'' CLASS DELAY REQUIRED ELEMENTS	00003340
'' 29 1 0 30109	00003310
11	00003360
''GUI RM CONT KYBD PROC RM-CONT CONTROL SEGMENT	00003370
''SCHEDULED BY UI SOFTWARE (20034)	
	00003380
''SERVICE LOAD ASSUMED NEGLIGIBLE. LOGIC SIMULATED.	00003390
Chass Delai Kedoiken Fremmis	00003400
77 30 1 0 30110 30112	00003410
	00003420
''GUK_NAV_TRGT_UPDT NAV/TARGET UPDATE CONTROL SEGMENT (SPEC)	00003430
''SCHEDULED BY UI SOFTWARE (20034)	00003440
''SERVICE LOAD ASSUMED NECLIGIBLE. LOGIC SIMULATED.	00003450
'' CLASS DELAY REQUIRED ELEMENTS	00003460
11 31 1 0 30111	00003470
TT	00003480
TOMI MCDS IN MCDS INPUT PROCESSOR	00003490
''SCHEDULED AT 200MS INTERVALS BY SYSTEM INITIALIZATION	00003500
The second secon	55055566

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1 1	•		CLASS	DELAY	REQUIRED ELEMENTS	00003510
2	2 3	32	1	0	30148 30149 1	00003520
T 1	i					00003530
1 1	'DGI	LDB	_IO LDI	3 I/O PROC	ESSOR	00003540
1 1	SCE	ŒDULÏ	ED AT REC	CULAR INTE	RVALS BY SYSTEM CONTROL/INITIALIZATION	00003550
1 1	иол	USE	DURING	MATED/DRO	P TEST	00003560
7 1	•		CLASS	DELAY	REQUIRED ELEMENTS	00003570
1 1	' 3	33	5	0	30136 30141 30149 1	00003580
1 1	r					00003590
! 1	DMC	SUP	ER USEF	R INTERFAC	E	00003600
T	SCE	EDUL1	ED BY SYS	STEM INITI	ALIZATION	00003610
1 1	ı		CLASS	DELAY	REQUIRED ELEMENTS	00003620
2	2 3	34	1	0	30313 50059 50060 1	00003630
1 1	ī					00003640
2	13	34	1	0	30313 1	00003650
1 1	DCI	CYC	DISPLAY	CYCLIC	DISPLAY PROCESSING	00003660
1 :	SCE	ŒDULĪ	ËD AT 100	MS INTERV	ALS BY SYSTEM INITIALIZATION	00003670
T 1	ī		CLASS	DELAY	REQUIRED ELEMENTS	00003680
2	2 3	35	1	0	30314 50055 50056 50057 I	00003690
2	2 13	35	1	0	30314 1	00003700
7 1	'					00003710
7 1	DDC	DWN	LST CONT	ROLS DO	WNLIST DATA CONTROLS PROCESSOR	00003720
					ICH IS NOT INVOKED DURING MATED/DROP TEST	00003730
1 1			CLASS	DELAY	REQUIRED ELEMENTS	00003740
1 1	. 3	36	1	0	30135	00003750
1 1	r					00003760
7 1	ARA	GPC	SWITCH	GPC SWIT	CH MONITOR	00003770
T	SCE	EDULI	D AT 100	OMS INTER	VALS BY SYSTEM INITIALIZATION	00003780
1 1	1		CLASS	DELAY	REQUIRED ELEMENTS	00003790
2	2 3	37	5	0	30118 1	00003800
7 1	t					00003810
1 1	DCS	SYNC	C GPC/E	CMMU DATA	CYCLE SYNCHRONIZER	00003820
7 1	SCE	ŒDULI	ED BY DDC	(20036)		00003830
1 1	ron'	REQU	JESTED DU	RING OPS2	. DCD IS ASSUMED TO BE ENABLED.	00003840
7 1	1		CLASS	DELAY	REQUIRED ELEMENTS	00003850
7 1	1 3	38	1	0	30134	00003860
1 3	ľ					00003870
			FLISGHT C		REFLIGHT OPERATIONAL SEQUENCE (OPS 1)	00003880
\$ 1	SCE	EDULI	ED BY UI	SOFTWARE	(20034)	00003890
T 1	ron '	USE	DURING	MATED/DRO	P TEST	00003900
1 1	ı		CLASS	DELAY	REQUIRED ELEMENTS	00003910
1 1	-	39	1	0		00003920
1 1	ı					00003930
1 1	1					00003940
1 1	***	r≉ ROU	JTINES **	******	****************	00003950
T 1	•					00003960
7 1		EAG	CH FUNCT	ON OR SET	OF FUNCTIONS CALLED IN PERFORMANCE OF A	00003970
* 1	ľ				FINED AS A ROUTINE. ROUTINE I IS RESERVED	00003980
1 1	r				XECUTIVE. ROUTINES WITH NUMBERS GREATER	00003990
1 1	r	THA	AN 300 RE	EPRESENT S	ETS OF FUNCTIONS.	00004000

T I								00004010
	REFLIGHT O	PS CONTROL	SEGMENT	(TASK 1	7)			00004020
t t		_PRE_FLT						00004030
1 1	SHARE	LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP.TIME	00004040
1 1	4 0	110001	1	0	10	442	16 0.4	00004050
1 1								00004060
''P	REFLIGHT E	EXECUTIVE	(TASK 1	B)				00004070
7 7	GEP_FRE	FLT EXEC						00004080
1 1	SHARE	LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP.TIME	00004090
11	29 0	110001	1	0	10	442	16 0.4	00004100
1 1								00004110
''N	AVIGATION	TRANSITION	TASK					00004120
1.1	GET NAV	TRANS						00004130
1 1	SHARE	LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP.TIME	00004140
1 1	30 0	110001	1	0	10	442	16 0.4	00004150
1 1								00004160
1 1 T.	AEM GUIDAN	ICE (TASK	10)					00004170
11	GGA TAEM		•					00004180
1.1	SHARE	LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP.TIME	00004190
3	31 1	110001	1	0	10	442	359 0	00004200
1 1								00004210
''I	MU MINOR C	YCLE EXECU	rive (1	TASK 9)				00004220
1 1	GMA MIN		·	•				00004230
1.1	SHARE	LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP.TIME	00004240
3	42 1	110001	1	0	10	442	355 0	00004250
7 7				_			-	00004260
T	MU RESOLVE	R PROCESSO	R (TASE	(S 8, 9)				00004270
1.1	GMD RES							00004280
1.1	SHARE	LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP.TIME	00004290
3	45 1	110001	1	0	10	442	356 0	00004300
11								00004310
''I	MU GYRO-CC	MPASS ALIG	NMENT ((TASK 22)				00004320
11	GMX GC A							00004330
11	SHARE	LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP.TIME	00004340
3	62 I	110001	1	0	10	442	16 0.4	00004350
1.1								00004360
* * I	MU VELOCIT	Y TILT (rask 23)					00004370
1 1	GMY VEL	TILT						00004380
1.1	SHARE	LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP.TIME	00004390
3	63 1	110001	1	0	10	442	397 0.26	00004400
1.1								00004410
* * F	DI FCS SEL	ECTION FILT	rer (ta	ASKS 6, 10)			00004420
1.1	GRA_FCS_		•	•				00004430
1 1		LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP.TIME	00004440
3	87 1	110001	1	0	10	442	16 0.206	00004450
T 1								00004460
' F	DI NAVAID	SELECTION 1	FILTER	(TASKS 8,	10)			00004470
1 1	GRC_NAVA							00004480
1 1	SHARE	LīB.DS	SIZE	TIME	PROCSR	MEMORY	COMP.TIME	00004490
3	89 1	110001	1	0	10	442	16 0.019	00004500

1 t								00004510
' SPEC	HORIZO	NTAL SITUA	TION CONTE	OL SEGME	NT (TA	SK 25,		00004520
	HORIZ		-		•	- · - ·		00004530
	HOREL SHARE	LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP.TIME	00004540
'' 105	1	110001	1	0	10	442	16 0.4	00004550
105	+	110001	-	Ū	10	772	10 01.	00004560
	urn to Ai	CTOULAGE	W GOVERNOT	CIZCATENITE	(TASK	261		00004570
			ON CONTROL	SEGMENT	ACA1)	20)		. 00004570
GU	B_VERT_	***			22222	100100011	com and	•
	SHARE	LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP.TIME	00004590
'' 106	1	110001	1	0	10	442	16 0.4	00004600
1 1								00004610
	IMU OPI	ERATIONS (CONTROL	(TASK 27)				00004620
'' GU	C_IMU_(OPRTNS						00004630
1 1	SHARE	LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP.TIME	00004640
'' 107	1	110001	1	0	10	442	16 0.4	00004650
T T								00004660
''SPEC	FCS/DE	DICATED DI	ISPLAY CHEC	CKOUT CON	TROL SEC	GMENT ((TASK 28)	00004670
	-	DD CKOUT						00004680
	SHARE	LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP TIME	00004690
'' 108	1	110001	1	0	10	442	16 0.4	00004700
11	-		_		- •			00004710
1 SPEC	RM-NAV	TGATTON CO	ONTROL SEGN	ARNT (T	ASK 29)			00004720
	H RM N.		MINOR DECI		1101(0),			00004730
	SHARE	LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP.TIME	00004740
'' 109	1	110001	1	0	10	442	16 0.4	00004740
11	1	110001	Τ.	U	10	442	10 0.4	00004750
	DM CON	r GONTODAT	CDCMDAD	(TASK 30				00004700
		r control	SEGPLEN 1	(IASK 30	')			00004770
GU	I_RM_C		OTER	m TM	DDOGGD	MEMORY	GOME WINE	00004780
	SHARE	LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP.TIME	00004790
11 110	1	110001	1	0	10	442	16 0.4	
	-				ć			00004810
			TE CONTROL	SEGMENT	(TASK	31)		00004820
		TRGT_UPDT						00004830
	SHARE	LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP.TIME	00004840
'' 111	1	110001	1	0	10	442	16 0.4	00004850
1.1								00004860
''RM-CO	NTROL	KEYBOARD I	PROCESSOR	(TASKS	16, 30)			00004870
'' GK	R_RM_C	ONT_KYBD_I	PROC					00004880
FT	SHARE	LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP.TIME	00004890
'' I12	1	110001	1	0	10	442	16 0.4	00004900
1 1								00004910
''DD DE	DICATE	D DISPLAY	CHECKOUT	(TASK 2	24)			00004920
	X DD C			•	•			00004930
11	SHARE	LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP.TIME	00004940
3 113	1	110001	1	0	10	442	16 0.4	00004950
11	-		•	J				00004960
''GPC I	ብር ል ፐብዩ							00004970
		LOCATOR						00004980
t t A.	.b_GFC_ SHARE	LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP.TIME	00004990
				0	10	442	16 0.24	00005000
'' 114	0	110001	1080	U	10	444	10 0.44	υυυςτουσ

7.1									00005010
1 T G	PC S	TARTUF	1						00005020
1.1			STARTUP						00005030
7 1		SHARE	LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP.TIME	00005040
1.1	115	0	110001	660	0	10	442	16 0.24	00005050
TT		-							00005060
115	YSTE	M TNTE	RFACE PRO	CESSOR (rask 7)				00005070
11		E SIP		<u> </u>	.,				00005080
11	111	SHARE	LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP.TIME	00005090
3	116	0	110001	800	0	10	442	16 0.656	00005100
11	110	U	110001	000	Ü	20	7-1-4	10 0.050	00005110
110	PC S	เมาซาน	MONITOR	(TASK 37)					00005120
11			SWITCH	(INDIX 57)					00005120
1.1	T,U	SHARE	LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP.TIME	00005130
3	118	0	110001	1300	0	10	442	16 0.214	00005150
11	TTO	U	110001	1300	U	10	442	10 0.214	00005150
	ים דמו	רא משמה	TIONAL SEC	HIENCE					00005170
11				ORMOR					00005170
11	£1.E	RB_IDLI SHARE	_	SIZE	TIME	PROCSR	MEMORY	COMP.TIME	00005190
1.1	110		LIB.DS		0	10	442	16 0.038	00005190
11	119	0	110001	600	U	10	442	10 0.020	00005200
	יחת ד	n a antara	CIDATION						00005220
7.1			GURATION						00005220
11	Ar		RECONFIG	CTER	en athéirí	PROCSR	MEMORY	COMP.TIME	00005240
11	100	SHARE	LIB.DS	SIZE	TIME O	10	MEMORY 442	16 0.384	00005250
1.1	120	0	110001	2280	U	10	442	10 0.304	00005250
	3770 0	OMETOI	mamton or	f & 37/0 11					00005270
11			JRATION CH	IANGE					00005270
17	ΑĒ	_	_CHG	0.7.6.7	m = 1.479	TROGER	1001/ODW	COMP BITME	00005290
11	101	SHARE	LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP.TIME	00005300
1 1	121	0	110001	5200	0	10	442	16 0.192	00005310
			rarm (mrair	man ottar	an.				00005310
11				TABLE CHAN	GE				
11	Al		_TABLE_CHO		m Ta co	DD C C C D	Managara	COMP WINE	00005330
11		SHARE	LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP.TIME	00005340
11	122	0	110001	480	0	10	442	16 0.13	00005350
					. 🖚				00005360
				CEM PROCESS	UR				00005370
7 7	AJ		_CONFIG_IT				1001000	401m mm	00005380
11		SHARE		SIZE	TIME	PROCSR	MEMORY	COMP.TIME	00005390
11	123	0	110001	1000	0	10	442	16 0.072	00005400
11									00005410
				MESSAGE HA	NDLER				00005420
1 1	Al		ONFIG_MSG						00005430
1.1		SHARE	LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP.TIME	00005440
1 1	124	1	110001	500	0	10	442	16 0.048	00005450
1.1									00005460
				FIGURATION					00005470
7 1	Al		_GPC_RECO	NFIG					00005480
1 1		SHARE		SIZE	TIME	PROCSR	MEMORY	COMP.TIME	00005490
1 1	125	1	110001	1000	0	10	442	16 0.307	00005500

11								00005510
''READ/	WRITE	SPECIALIS	T FUNCTION					00005520
TT AS	B RD/W	RT						00005530
**	SHARE	LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP.TIME	00005540
11 127	0	110001	1100	0	10	442	16 0.115	00005550
11	•			_		• • • • • • • • • • • • • • • • • • • •		00005560
TITTME 3	MANACE	мемт срес	IALIST FUNC	TON				00005570
	C TIME		TWITTH FONG	1 1011				00005580
	C_1 IME SHARE	LIB.DS	CTOR	TIME	PROCSR	MEMORY	COMP.TIME	00005590
,			SIZE				16 0.0864	00005590
11 128	0	110001	800	0	10	442	10 0.0004	
								00005610
			IST FUNCTIO	N				00005620
		_CONTROL						00005630
	SHARE	LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP.TIME	00005640
'' 129	0	110001	1120	0	10	442	16 0.104	00005650
7.1								00005660
''GPC D	OWNLIS	T FORMATI	ER (TASK	7)				00005670
II DC	D DOWN	LIST						00005680
11	SHARE	LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP.TIME	00005690
3 130	0	110001	2000	0	10	442	16 0.24	00005700
1 1								00005710
1 GPC/PC	CMMII D	ATA CYCLE	SYNCHRONIZ	ER (TA	SK 38)			00005720
	SHARE	LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP.TIME	00005730
11 134	0	110001	320	0	10	442	364 0.215	00005740
11	J	110001	70	Ŭ	10		504 01215	00005750
I tope n	กมหา тด	ም ከልሞል ሮር	אוייים אויים ססתר	FSSOD	(ጥለፍሄ 36	3		
			NTROLS PROC	ESSOR	(TASK 36)		00005760
t t DD	C_DWN_	LST_CONTE	ROLS		•		COMP TIME	00005760 00005770
ii DD	C_DWN_ SHARE	LST_CONTE LIB.DS	ROLS SIZE	TIME	PROCSR	MEMORY	COMP.TIME	00005760 00005770 00005780
11 DD0	C_DWN_	LST_CONTE	ROLS		•		COMP.TIME	00005760 00005770 00005780 00005790
11 DD	C_DWN_ SHARE O	LST_CONTE LIB.DS 110001	ROLS SIZE 320	TIME	PROCSR	MEMORY		00005760 00005770 00005780 00005790 00005800
'' DD' '' 135	C_DWN_ SHARE O /O PRO	LST_CONTE LIB.DS 110001 CESSOR	ROLS SIZE	TIME	PROCSR	MEMORY		00005760 00005770 00005780 00005790 00005800 00005810
11 DDC 11 135 11 LDB I	C_DWN_ SHARE O /O PRO I_LDB_	LST_CONTE LIB.DS 110001 CESSOR IO	ROLS SIZE 320 (TASK 33)	TIME O	PROCSR 10	MEMORY 442	364 0.3	00005760 00005770 00005780 00005790 00005800 00005810 00005820
11 DD	C_DWN_ SHARE O /O PRO I_LDB_ SHARE	LST_CONTE LIB.DS 110001 CESSOR IO LIB.DS	ROLS SIZE 320 (TASK 33) SIZE	TIME O TIME	PROCSR 10 PROCSR	MEMORY 442 MEMORY	364 0.3 COMP.TIME	00005760 00005770 00005780 00005790 00005800 00005810 00005820 00005830
'' 135 '' 136	C_DWN_ SHARE O /O PRO I_LDB_	LST_CONTE LIB.DS 110001 CESSOR IO	ROLS SIZE 320 (TASK 33)	TIME O	PROCSR 10	MEMORY 442	364 0.3	00005760 00005770 00005780 00005790 00005800 00005810 00005820 00005830
11 DD	C_DWN_ SHARE O /O PRO I_LDB_ SHARE	LST_CONTE LIB.DS 110001 CESSOR IO LIB.DS	ROLS SIZE 320 (TASK 33) SIZE	TIME O TIME	PROCSR 10 PROCSR	MEMORY 442 MEMORY	364 0.3 COMP.TIME	00005760 00005770 00005780 00005790 00005800 00005810 00005820 00005830 00005840
'' 135 '' 136 '' LDB O	C_DWN_ SHARE O /O PRO I_LDB_ SHARE 1 UTPUT	LIB.DS 110001 CESSOR IO LIB.DS 110001	ROLS SIZE 320 (TASK 33) SIZE	TIME O TIME	PROCSR 10 PROCSR	MEMORY 442 MEMORY	364 0.3 COMP.TIME	00005760 00005770 00005780 00005790 00005800 00005810 00005820 00005830 00005840 00005850
'' 135 '' 136 '' LDB O	C_DWN_ SHARE O /O PRO I_LDB_ SHARE 1	LIB.DS 110001 CESSOR IO LIB.DS 110001	SIZE 320 (TASK 33) SIZE 3040	TIME O TIME	PROCSR 10 PROCSR	MEMORY 442 MEMORY	364 0.3 COMP.TIME	00005760 00005770 00005780 00005790 00005800 00005810 00005820 00005830 00005840
'' 135 '' 136 '' LDB O' '' DG	C_DWN_ SHARE O /O PRO I_LDB_ SHARE 1 UTPUT	LIB.DS 110001 CESSOR IO LIB.DS 110001 MESSAGE C	SIZE 320 (TASK 33) SIZE 3040	TIME O TIME	PROCSR 10 PROCSR	MEMORY 442 MEMORY	364 0.3 COMP.TIME	00005760 00005770 00005780 00005790 00005800 00005810 00005820 00005830 00005840 00005850
'' 135 '' 136 '' LDB O' '' DG	C_DWN_ SHARE O /O PRO I_LDB_ SHARE 1 UTPUT O_LDB_	LIB.DS 110001 CESSOR IO LIB.DS 110001	SIZE 320 (TASK 33) SIZE 3040 COORDINATOR SIZE	TIME O TIME O	PROCSR 10 PROCSR 10	MEMORY 442 MEMORY 442	364 0.3 COMP.TIME 16 0.24	00005760 00005770 00005780 00005790 00005800 00005810 00005820 00005830 00005840 00005850 00005860
'' 135 '' LDB I '' 136 '' LDB O	C_DWN_ SHARE O /O PRO I_LDB_ SHARE 1 UTPUT O_LDB_ SHARE	LIB.DS 110001 CESSOR IO LIB.DS 110001 MESSAGE C	SIZE 320 (TASK 33) SIZE 3040 COORDINATOR	TIME O TIME O	PROCSR 10 PROCSR 10	MEMORY 442 MEMORY 442 MEMORY	COMP.TIME 16 0.24 COMP.TIME	00005760 00005770 00005780 00005800 00005810 00005820 00005830 00005840 00005850 00005860 00005870 00005880 00005890
'' 135 '' 136 '' 136 '' LDB O '' DG	C_DWN_ SHARE O /O PRO I_LDB_ SHARE 1 UTPUT O_LDB_ SHARE 1	LIB.DS 110001 CESSOR IO LIB.DS 110001 MESSAGE O COORD LIB.DS 110001	SIZE 320 (TASK 33) SIZE 3040 COORDINATOR SIZE 840	TIME O TIME O TIME O	PROCSR 10 PROCSR 10	MEMORY 442 MEMORY 442 MEMORY	COMP.TIME 16 0.24 COMP.TIME	00005760 00005770 00005780 00005800 00005810 00005820 00005830 00005840 00005850 00005860 00005870 00005880 00005890
'' 135 '' 136 '' 136 '' LDB O' '' LDB O' '' 137 '' 137	C_DWN_ SHARE O /O PRO I_LDB_ SHARE 1 UTPUT O_LDB_ SHARE 1 ESSAGE	LIB.DS 110001 CESSOR IO LIB.DS 110001 MESSAGE (COORD LIB.DS 110001	ROLS SIZE 320 (TASK 33) SIZE 3040 COORDINATOR SIZE 840 OR (TASK 7	TIME O TIME O TIME O	PROCSR 10 PROCSR 10	MEMORY 442 MEMORY 442 MEMORY	COMP.TIME 16 0.24 COMP.TIME	00005760 00005770 00005780 00005800 00005810 00005820 00005830 00005840 00005850 00005860 00005870 00005880 00005890 00005910
LDB O	C_DWN_ SHARE O /O PRO I_LDB_ SHARE 1 UTPUT O_LDB_ SHARE 1 ESSAGE M_ICC_	LIB.DS 110001 CESSOR IO LIB.DS 110001 MESSAGE (COORD LIB.DS 110001 COLLECTOR	ROLS SIZE 320 (TASK 33) SIZE 3040 COORDINATOR SIZE 840 OR (TASK 7	TIME O TIME O TIME O	PROCSR 10 PROCSR 10 PROCSR 10	MEMORY 442 MEMORY 442 MEMORY 442	364 0.3 COMP.TIME 16 0.24 COMP.TIME 16 0.048	00005760 00005770 00005780 00005800 00005810 00005820 00005830 00005840 00005850 00005860 00005870 00005890 00005900 00005910
LDB O	C_DWN_ SHARE O /O PRO I_LDB_ SHARE 1 UTPUT O_LDB_ SHARE 1 ESSAGE M_ICC_ SHARE	LIB.DS 110001 CESSOR IO LIB.DS 110001 MESSAGE (COORD LIB.DS 110001 COLLECTO LIB.DS	ROLS SIZE 320 (TASK 33) SIZE 3040 COORDINATOR SIZE 840 OR (TASK 7	TIME O TIME O TIME	PROCSR 10 PROCSR 10 PROCSR	MEMORY 442 MEMORY 442 MEMORY 442	COMP.TIME 16 0.24 COMP.TIME 16 0.048 COMP.TIME	00005760 00005770 00005780 00005800 00005810 00005820 00005830 00005840 00005850 00005860 00005870 00005890 00005900 00005910 00005930
LDB O	C_DWN_ SHARE O /O PRO I_LDB_ SHARE 1 UTPUT O_LDB_ SHARE 1 ESSAGE M_ICC_	LIB.DS 110001 CESSOR IO LIB.DS 110001 MESSAGE (COORD LIB.DS 110001 COLLECTOR	ROLS SIZE 320 (TASK 33) SIZE 3040 COORDINATOR SIZE 840 OR (TASK 7	TIME O TIME O TIME O	PROCSR 10 PROCSR 10 PROCSR 10	MEMORY 442 MEMORY 442 MEMORY 442	364 0.3 COMP.TIME 16 0.24 COMP.TIME 16 0.048	00005760 00005770 00005780 00005800 00005810 00005820 00005830 00005840 00005850 00005860 00005860 00005890 00005910 00005920 00005940
'' 135 '' LDB I '' 136 '' LDB O '' DG '' DG '' 137 '' ICC M	C_DWN_ SHARE O /O PRO I_LDB_ SHARE 1 UTPUT O_LDB_ SHARE 1 E.S.SAGE M_ICC_ SHARE 1	LIB.DS 110001 CESSOR IO LIB.DS 110001 MESSAGE COCORD LIB.DS 110001 COLLECTO LIB.DS 110001	SIZE 320 (TASK 33) SIZE 3040 COORDINATOR SIZE 840 OR (TASK 7 SIZE 940	TIME O TIME O TIME O	PROCSR 10 PROCSR 10 PROCSR	MEMORY 442 MEMORY 442 MEMORY 442	COMP.TIME 16 0.24 COMP.TIME 16 0.048 COMP.TIME	00005760 00005770 00005780 00005800 00005810 00005820 00005830 00005840 00005850 00005860 00005870 00005890 00005910 00005920 00005930 00005940 00005950
'' DD' '' 135 '' LDB I '' LDB O' '' 136 '' LDB O' '' DG' '' DG' '' 137 '' ICC M '' DI '' D	C_DWN_ SHARE O PRO I_LDB_ SHARE 1 UTPUT O_LDB_ SHARE 1 E5SAGE M_ICC_ SHARE 1 AY PRE	LIB.DS 110001 CESSOR IO LIB.DS 110001 MESSAGE COCORD LIB.DS 110001 COLLECTOR LIB.DS 110001 COLLECTOR LIB.DS 110001	ROLS SIZE 320 (TASK 33) SIZE 3040 COORDINATOR SIZE 840 OR (TASK 7	TIME O TIME O TIME O	PROCSR 10 PROCSR 10 PROCSR	MEMORY 442 MEMORY 442 MEMORY 442	COMP.TIME 16 0.24 COMP.TIME 16 0.048 COMP.TIME	00005760 00005770 00005780 00005790 00005800 00005810 00005820 00005830 00005840 00005850 00005860 00005870 00005880 00005900 00005910 00005930 00005940 00005950 00005960
'' DD' '' 135 '' LDB I '' DG '' 136 '' LDB O' '' DG '' DG '' DG '' DG '' DG '' DI	C_DWN_ SHARE O /O PRO I_LDB_ SHARE 1 UTPUT O_LDB_ SHARE 1 ESSAGE M_ICC_ SHARE 1 AY PRE S_PLAY	LIB.DS 110001 CESSOR IO LIB.DS 110001 MESSAGE COORD LIB.DS 110001 COLLECTOR LIB.DS 110001 COLLECTOR LIB.DS 110001	ROLS SIZE 320 (TASK 33) SIZE 3040 COORDINATOR SIZE 840 OR (TASK 7 R SIZE 940 N AND CONTRO	TIME O TIME O TIME O	PROCSR 10 PROCSR 10 PROCSR 10	MEMORY 442 MEMORY 442 MEMORY 442 MEMORY 442	364 0.3 COMP.TIME 16 0.24 COMP.TIME 16 0.048 COMP.TIME 16 0.323	00005760 00005770 00005780 00005790 00005800 00005810 00005820 00005830 00005840 00005850 00005860 00005870 00005890 00005910 00005910 00005920 00005940 00005950 00005960
'' 135 '' 136 '' 136 '' 137 '' 137 '' 137 '' 137 '' 137 '' 137 '' 137 '' 137 '' 137	C_DWN_ SHARE O /O PRO I_LDB_ SHARE 1 UTPUT O_LDB_ SHARE 1 E5SAGE M_ICC_ SHARE 1 AY PRE S_PLAY SHARE	LIB.DS 110001 CESSOR IO LIB.DS 110001 MESSAGE (COORD LIB.DS 110001 COLLECTOR LIB.DS 110001 COLLECTOR LIB.DS 110001	ROLS SIZE 320 (TASK 33) SIZE 3040 COORDINATOR SIZE 840 OR (TASK 7 SIZE 940 N AND CONTRO	TIME O TIME O TIME O TIME O L	PROCSR 10 PROCSR 10 PROCSR 10 PROCSR 10	MEMORY 442 MEMORY 442 MEMORY 442 MEMORY 442	COMP.TIME 16 0.24 COMP.TIME 16 0.048 COMP.TIME 16 0.323	00005760 00005770 00005780 00005790 00005800 00005810 00005820 00005830 00005840 00005850 00005860 00005870 00005890 00005900 00005910 00005910 00005930 00005940 00005950 00005960 00005970 00005980
'' DD' '' 135 '' LDB I '' DG '' 136 '' LDB O' '' DG '' DG '' DG '' DG '' DG '' DI	C_DWN_ SHARE O /O PRO I_LDB_ SHARE 1 UTPUT O_LDB_ SHARE 1 ESSAGE M_ICC_ SHARE 1 AY PRE S_PLAY	LIB.DS 110001 CESSOR IO LIB.DS 110001 MESSAGE COORD LIB.DS 110001 COLLECTOR LIB.DS 110001 COLLECTOR LIB.DS 110001	ROLS SIZE 320 (TASK 33) SIZE 3040 COORDINATOR SIZE 840 OR (TASK 7 R SIZE 940 N AND CONTRO	TIME O TIME O TIME O	PROCSR 10 PROCSR 10 PROCSR 10	MEMORY 442 MEMORY 442 MEMORY 442 MEMORY 442	364 0.3 COMP.TIME 16 0.24 COMP.TIME 16 0.048 COMP.TIME 16 0.323	00005760 00005770 00005780 00005790 00005800 00005810 00005820 00005830 00005840 00005850 00005860 00005870 00005890 00005910 00005910 00005920 00005940 00005950 00005960

''LIGH	TS AND .	ALARM PH	ROCESSING	(TASK 7)				00006010
		T ALARM		,				00006020
1 1	SHARE	LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP.TIME	00006030
3 140		110001	1600	0	10	442	430 0.24 10	00006040
11	_			J	10	• • •	-,50 0 10	00006050
T T.DR 1	MESSAGE	ROHTER	(TASK 33)					00006060
	LM LDB		(CC Mant)					00006070
11	SHARE	LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP.TIME	00006080
'' 141	1	110001	840	0	10	442	16 0.144	00006090
11	7	110001	040	U	10	442	10 0.144	
	MESSAGE	DOITED	(m.s.ov. 71					00006100
			(TASK 7)					00006110
וע וו	ME_ICC_	•	0.7877	m=1 m	DDOGGD) TELVODII	2010 atia	00006120
	SHARE	LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP.TIME	00006130
3 147	1	110001	1260	0	10	442	16 0.087	00006140
								00006150
		PROCESSO	OR (TASK 3	2)				00006160
	MI_MCDS							00006170
11	SHARE	LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP.TIME	00006180
3 148	0	110001	400	0	10	442	16 0.18	00006190
11								00006200
	MESSAG	E PROCES	SSOR (TASKS	32, 33)				00006210
ıı Di	MM_MCDS	PROCESS	3					00006220
1 1	SHARE	LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP.TIME	00006230
3 149	1	110001	2200	0	10	442	432	00006240
1 1								00006250
''FAUL	r Messa	GE SCAN	(TASK 7)					00006260
	MS FMS		,					00006270
† †	SHARE	LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP.TIME	00006280
3 151	1	110001	480	0	10	442	429 0.216 10	00006290
1 1			,	_		,		00006300
' 'MESS	AGE LIN	E SUPPOR	RT FUNCTION					00006310
			APPLICATION	ሮባእሞጽባፒ.	SEGMENTS			00006320
	MS MSG		IN I BEOMETON	0011111011	BHOLLDINAO			00006320
T f	SHARE	LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP.TIME	00006340
'' 152	1	110001	3800	0	10	442	16 0.096	00006350
11	-	110001	3000	U	10	442	10 0.090	00006360
TOOM!	TCATION	MODING	AND SEQUENC	ፐአ ፕ <i>ሮ</i>				00006370
	NX BMS	MODING	AND SEQUENC	TIAG				
		דרידיים דאו	APPLICATION	COMMINAT	CECMENTO			00006380
IUGGA						MUMORI	COMP. TITLE	00006390
'' 153	SHARE	LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP.TIME	00006400
11	1	110001	1000	0	10	442	16 0.096	00006410
	помоды	ATROUG TA	MA PROVIDER					00006420
			ATA REQUEST	PROCESSOR	L			00006430
1 1 D.	TIME_		0700		DD0	1001:00°		00006440
		LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP.TIME	00006450
774	1	110001	300	0	10	442	16 0.144	00006460
								0000//
t t								00006470
''SYST			DATA ACQUIS	ITION (TA	SK 11)			00006480
''SYST	DA_DATA	AGEMENT _ACQUISI LIB.DS		ITION (TA	ASK 11) PROCSR	MEMORY	COMP.TIME	

3 155	1	110001	1	0	10	442	386	0	00006510
1 1									00006520
''SUBSYS	STEM (CONFIGURATI	ON MONITOR	ING (TASE	KS 13. 1	4)			00006530
		YS CONFIG		•	-, -	.,			00006540
	SHARE	LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP	.TTME	00006550
3 157	1	110001	1	0	10			0.0456	00006560
11	~	20001	•	Ū	-0	7-7-2		,,0,50	00006570
''FLIGH	י כטאיז	יצות. (דמק	K 6)						00006580
	FUC			YCLE EXE	TIPTUE				00006590
		1							00006600
יי כפר	יייייייייייייייייייייייייייייייייייייי	-)	ባ ልጥልጠ	ROCESSING	2 2				00006610
ii CPI	· CMT/S	ያ ያ ጀብሮ	COMMAN	DS PROCES	3 2 390p				00006620
11 GRI	_CIDIC SULTE	PROC CCH_SF I_CE EE	US TAT	TTCH SEL	ያርጥቸርስህ ፑ	קאיר דדי			00006630
יום פוני	DTOIL	CH	דטב טה סדיירט	COMPROT I	T PMTMT	THIER			00006640
11 601	2 BA (1_0B T	POTT./V	VII COMITED	TETTINE	'እ ፣ ጥ			00006650
11 60	BF (בני קי	RODDA E	LAP CONTR	מניזבונות מכ איש דים דרוכ	EVID. IX T			00006660
		R AUTO CE	ROLL/Y BODY F ELEVAT	DE VILLO (CONT.)	יטטיים אטט ממנעם בסטג	TT TAMENT			00006670
		R MD CE	THEAT	OR AUTO (בם הטאנהם במינדונים	OT FIRME	יתורי		00006680
		R CAS CE	PLEVAT	OR CAS CO	INTEGER	TEMENT	ITA T		00006690
		N AUTO CE		N AUTO CO					00006700
		MD CE		N MAN-DII			TT		00006710
II con	 	T C V G C E	ATT FDO	N CAS COM			1		00006720
11 603	ו אומון. ביים אומיים	EO_CEO_	GAUUIG	AUTO COM					00006720
11 603	Z RDR	MD CE	משתתוק	MAN-DIR	TOSTKOD.	ET EMENT	•		00006740
יי פכז	RDB	AUTO_CE MD_CE CAS_CE	REGULIA	CAS CONT	מידו וחסי	MENT.			00006750
11 GCI	I NU C	CAS_CE	NOSTUH	EEL CONTI					00006760
11 600	1 SYS	_CHKOUT	CHECKO		COL ELECT	7211			00006770
TT GOT	S BECC	_O.R.OOT ON_INIT	RECONE	IGURATIO	J & TMTT	ተልተ.ፕፖልጥፐ	OM		00006780
11 605	SCHI	ED GAINS	SCHEDII	LE GAINS					00006790
	SHARE	LIB.DS	SIZE		PROCSR	MEMORY	COMP	TME	00006800
3 301	0	110001	1		10	442			00006810
11	Ū	110001	*	Ū	10	442	JJ0 (,	00006820
I IMATED.	สกฐสา/	CONTROL	(ጥልፍፑ ደነ						00006830
		MATED_DRO		CONTROL	SECMENT	1			00006840
'' GAT	TTAM (E PROCESS					00006850
	FLT		TMT	FLIGHT A		PROCESS	OR		00006860
		LIB.DS	STZE			MEMORY			00006870
3 302	0	110001	1	0	10	442	361		00006880
11	J	110001	-	Ū	10		301 (•	00006890
רא וואדיי	क्ष जुका	ROCESSING,	ACCELEROME	TER ACCIR	AULT TUR	& GYRO	TOROII:	TNG	00006900
''(TASKS				11111 110001		u 01110	"ozeq".	2110	00006910
	3 IMU								00006920
	ACP								00006930
	GYO								00006940
		LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP	.TIME	00006950
3 303	1	110001	1	0	10	442	362		00006960
11	_		_	Ť	-	• •		-	00006970
''DISPLA	AYS AN	ND IMU MODI	NG (TASK	s 10, 18)				00006980
		DISP PROC	-	DICATED I		PROCESSO	R		00006990
		AMI PROC		DICATED 1				OCESSOR	00007000
			4,44						

" GDE ADI PROC	DEI	ICATED 1	DISPLAY	ADI PROC	ESSOR	00007010
GDF HSI PROC				HSI PROC		00007020
GDZ DISP PROC	CRT	DISPLA	Y PROCES	SOR		00007030
'' GMN IMU MODING		MODING				00007040
'' GPC AD CALC		R-DATA CA	ALCULATI	ONS		00007050
'' SHARE LIB.DS	SIZE	TIME	PROCSR		COMP.TIME	00007060
3 304 1 110001	1	0	10	442	390 0	00007070
11	_	•				00007080
"IMU GYRO AND ACCELEROM	ETER FINCT	TONS	(TASKS 1	0. 19)		00007090
						00007100
'' GML ACP TRSF	IMU ACCEI	EROMETE!	R PIT.SE		MATTON	00007110
'' GMK GYO COMP	IMU ACCEI IMU ACCEI IMU GYRO	COMPENS	ATTON	ridinor on	111111111	00007120
'' SHARE LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP.TIME	00007130
	1	0	10	442		00007140
3 303 1 110001	.	U	10	774	10 1.344	00007150
''NAVIGATION (TASKS 10	15\					00007160
" GNA MLS MEAS	MSELS MEA	יומשאשווים	י ספררים	CINC		00007170
CNA_FILS_FIEAS	TACAN MEA					00007170
GNG_TACAN_MEAS GNC_BARO_ALT GND_RADAR_ALT	BARO-ALT				CCTNC	00007190
ONC DARO ALI	RADAK-ALI					00007200
	NAVIGATIO			ENI FROC	FOOTING	00007200
GME_MMV_DAMO			TIAE			00007210
GILT DUTU DIUM	DATA SAV		nur en			00007220
GW2_FTDEO_DGFBDTW	MEASUREM	SNT SCRE	DOPEK			00007230
GHI THEY TELLET	FILTER	m Takin	DDOGGD	MEMODA	COMP WINE	00007240
OURINE TIP.DO	SIZE	TIME	PROCSR	MEMORY		
3 306 1 110001	1	0	10	442	368 0.15	00007260
						00007270
''GUIDANCE (TASK 10)		/	GUITDANG			00007280
GGB_AL_GUID	APPROACH			E		00007290
THE POLLOWING AD			GGB			00007300
' GGC_P_TRAJ	PITCH TRA					00007310
GGD TRAJ CAP	TRAJECTO		RE			00007320
. GGE_2G2	STEEP GL		01 TDD <i>01</i> 0			00007330
001_T_000	FLARE &		GLIDESTO	PE		00007340
'' GGG_FF	FINAL FLA		ı m z ovi			00007350
OGII_I _DINC	PITCH SY		ATION			00007360
'' GGI_R_CMD	ROLL COM		770007	MANORY	AOM MINE	00007370
'' SHARE LIB.DS	SIZE	TIME			COMP.TIME	00007380
3 307 1 110001	1	0	10	442	370 0	00007390
***************************************						00007400
	SK 15)					00007410
GEN_TAEM_NAV_EXEC	CYCLIC E			•••		00007420
'' GN2_INFLT_HARDSTANT					CONT	00007430
'' GN4_COV_RECONFG	STATE &				.UN	00007440
'' GN5_AVG_G_DP	DOUBLE P					00007450
'' GN6_COV_PROP	COVARIAN				001/D	00007460
'' SHARE LIB.DS	SIZE	TIME	PROCSR	MEMORY	COMP.TIME	00007470
3 308 1 110001	1	0	10	442	357 0	00007480
11	.					00007490
''IMU MAJOR FUNCTIONS	(TASK 19)					00007500

'' GMG MAJ EXEC	MAJOR CYCLE EXECUTIVE	00007510
'' GMI T UPDATE	TRANSFORM UPDATE	00007520
'' GMJ TOR TRSF	TORQUING TRANSFORM	00007530
- -	LARGE ANGLE TORQUING	00007540
Griff LIKI_FONG	<u> </u>	
GLIO_TOL_LTUI	LEAST SQUARES FILTER	00007550
" SHARE LIB.DS	SIZL TIME PROCSR MEMORY COMP.TIME	00007560
3 309 1 110001	1 0 10 442 353 0	00007570
11		00007580
' TMI ATTITUDE AND NAV-BA	ASE TO CLUSTER TRANSFORMATION (TASK 20)	00007590
'' GMS IMU ATT		00007600
GMP TNB CL		00007610
	CIER MINE PROOFE MENORY GOVE MINE	
SHWKE PIR. D2	SIZE TIME PROCSR MEMORY COMP.TIME	00007620
3 310 1 110001	1 0 10 442 354 0	00007630
f T		00007640
''IMU CALIBRATION (TASK	(21)	00007650
'' GMU HANG CALA	HANGAR CALIBRATION A	00007660
'' GMV HANG CALB	HANGAR CALIBRATION B	00007670
'' GMT PFLT CALA	PREFLIGHT CALIBRATION A	00007680
		00007690
OUNTE TIPO		
3 311 1 110001	1 0 10 442 16 30.0	00007700
		00007710
''REDUNDANCY MANAGEMENT	(TASKS 10, 18)	00007720
'' GRE_FDIR	FDI SEQUENCER	00007730
'' THE FOLLOWING ARE	E CONTROLLED BY GRE	00007740
" GRF TRANS FDIR	TRANSDUCER SEQUENCER	00007750
" GRG ACT FDBK FDIR	ACTUATOR FEEDBACK SEQUENCER	00007760
'' GRH SWT FDIR	SWITCH SEQUENCER	00007770
'' GRI RGA FDIR	RATE-GYRO SEQUENCER	00007780
'' GRJ AA FDIR	ACCELEROMETER ASSEMBLY	00007790
GW_WW_LDIK		
GIAL_IAL_PDIK	RADAR ALTIMETER	00007800
GKT_THO_FDIK	IMU SEQUENCER	00007810
'' GRM_ADTA_FDIR	ADTA SEQUENCER	00007820
" GRN_TACAN_FDIR	MSBLS SEQUENCER	00007830
'' GRO MSBLS FDIR	MSBLS SEQUENCER	00007840
'' GRP BF FDIR	BODY FLAP SEQUENCER	00007850
'' SHARE LIB.DS	SIZE TIME PROCSR MEMORY COMP.TIME	00007860
3 312 1 110001	1 0 10 442 428 0	00007870
11	1 0 10 472 420 0	00007880
* USER INTERFACE SUPERVIS	SOR (TASK 34)	00007890
	· ·	00007900
DIIO_DOI BR	USER INTERFACE CONTROL SUPERVISOR	
DIIO_I DNGI IOND	KEYBOARD FUNCTIONS	00007910
DMC_APP_INT	APPLICATION CONTROL INTERFACE	00007920
DMC_MCDS_CNT	MCDS DISPLAY CONTROL	00007930
	APPLICATION KEYS PROCESSING	00007940
'' DMC DISPLAY	DISPLAY COORDINATION	00007950
DMC NEW DISPLAY	NEW DISPLAY PROCESSING	00007960
' DMC SEQ REQ_PROC	SEQUENCE REQUEST PROCESSING	00007970
DIM ICC COLLECTOR	ICC MSG COLLECTOR	00007980
" SHARE LIB.DS		00007990
OUTUE TID-DO		0008000
3 313 0 110001	10380 0 10 442 431	00000000

1.1										00008010
1 1 C	YCLIC	DISP	LAY PROCES	SING	(TASK 35)					00008020
7.7		#CYC			C DISPLAY	PROCESSIN	NG			00008030
1.1		#CON			CONVERSION					00008040
1.1		#FMT			FORMATTING					00008050
1.1			LIB.DS	SIZE	TIME		MEMORY	COMP.TIN	Œ	00008060
3	314		110001	5252	0	10	442	435 2.06		00008070
11	347	Ū	110001	J-52	J		,	.55 -100	0.0	0808000
' 'M	ATED	DROP.	WARMIP. A	ND RAW	DATA PROCE	ESSING	(TASKS 10	18)		00008090
11			DROP EXEC		/DROP EXEC		(-,,		00008100
1 1		AVG			E PRECISIO		e G			00008110
1.1			PARAM		PARAMETERS		-			00008120
1.1					DATA PROCE					00008130
7 1					DATA PROC					00008140
1 t			ATA PROC		ALTIMETER)R			00008150
11					DATA PROC					00008160
1.1			N WARMUP		WARM-UP					00008170
1.1			S WRMUP		WARM-UP					00008180
1.1		RA W			ALTIMETER	WARM-IIP				00008190
1 1			LIB.DA	SIZE	TIME		MEMORY	COMP.TIN	Æ	00008200
3	315		110001	1	0	10	442	396 0		00008210
11		J	4-0-		-		. , _	374 5		00008220
115	YSTEN	IS MAN	AGEMENT PE	RECEMAN	CE MONITO	RING (TASI	KS 12. 13	3)		00008230
11			T DETECT A			DETECTION				00008240
1.1			ON PROCESS			NDITION P				00008250
7 7			IAL COMP	-		AL COMPUTA		_		00008260
11			OG SCALE			SCALING				00008270
1.1		_	LIB.DS	SIZE	TIM		MEMORY	COMP TIM	1E	00008280
3	316	1	110001	1	0	10	442)	00008290
t t		_		_		•				00008300
۲Ŧ	ERFOR	MANCE	MONITORIN	NG CONTR	OL (TASK	12)				00008310
1.1			ORM MON CO		PM CON					00008320
1.1			LIB.DS		TIME		MEMORY	COMP.TI	4E	00008330
3	317		110001	1	0	10	442	387		00008340
1.1										00008350
1 1										00008360
114	***	ŒSSAG	ES *****	*****	*****	*****	*****	*****	****	00008370
1.1										00008380
7 7	A	ALL DA	TA TRANSM	ISSIONS	OF THE DPS	S ARE REP	RESENTED	AS MESSAG	GES.	00008390
1.1	ì	MESSAG	ES 1 THROU	JGH 5 AR	E RESERVE	FOR THE	SIMULAT	ION EXECUT	rive.	00008400
1.1										00008410
' ' B	EAD 1	FROM F	F01, FF02	, FF03 -	-					00008420
1 1			METÉR ASSI	•						00008430
7 1				-	R 1 & 2 (1	LH RHC, R	H RHC)			00008440
7 1					LER 1 & 2	-	·			00008450
1.1					SSEMBLY 1	_	A)			00008460
1.1			ISCRETES							00008470
1 1	3	NATURE	SOURCE	SINK L	ENGTH	INTERVA	L STAR	TOTAL	SE T	00008480
5	6	0	70001	380 1	6 12 0	16 1 0	1	3		00008490
5	7	2	50006	70001 1	16 56 0	16 0 0	0	3		00008500

				-							
11											00008510
		FF04 MD									00008520
1 1		NATURE	SOURCE	SINK	LENGTH	INTERVAL	START	TOTAL	SE	T	00008530
5	8	0	70001	60012	16 2 0	16 0 0	1	1			00008540
5	9	2	50008	70001	16 24 0	16 0 0	0	1			00008550
1.1											00008560
"R	EAD	IMU FRO	M FF01,	FFO2,	FF03						00008570
1 1		NATURE	SOURCE	SINK	LENGTH	INTERVAL	START	TOTAL	SE	T	00008580
5	10	0	70001	380	16 2 0	16 1 0	1	3			00008590
5	11	2	50010	79001	16 28 0	16 0 0	0	3			00008600
1 1											00008610
' ' R	EAD	FROM FF	01 -								00008620
1.1	FW	D ATTAC	H POINT	VOLTAG	E (LCA)						00008630
11	ΑI	R DATA	TRANSDU	CER ASS	EMBLY (ADTA)					00008640
1 1	MS	BLS									00008650
7 1	TA	CAN AND	TACAN I	REGISTE	R						00008660
1 1	RA	DAR ALT	IMETER	(RAD AL	T)						00008670
11		NATURE	SOURCE	SINK	LENGTH	INTERVAL	START	TOTAL	SE	\mathbf{T}	00008680
5	12	0	70001	60009	16 1 2 0	16 0 0	1	1			00008690
5	13	2	50012	70001	16 32 0	16 0 0	0	1			00008700
1 1											00008710
' 'R	EAD	FROM FF	02 -								00008720
7.1	AD	TA									00008730
11	MS	BLS									00008740
7 7	TA	CAN AND	TACAN	CONTROL	REGISTER						00008750
1.1	RA	D ALT									00008760
11		NATURE	SOURCE	SINK	LENGTH	INTERVAL	START	TOTAL	SE	T	00008770
5	14	0	70001	60010	16 10 0	16 0 0	1	1			00008780
5	15	2	50014	70001	16 34 0	16 0 0	0	1			00008790
1 1											0008800
''R	EAD	FROM FF	03 -								00008810
7.1	LC	A									00008820
1.1	AD	TΑ									00008830
1 1	MS	BLS									00008840
1 1	TA	CAN AND			REGISTER						00008850
1 1		NATURE	SOURCE	SINK	LENGTH	INTERVAL	START	TOTAL	SE	T	00008860
5	16	0	70001	60011	16 10 0	16 0 0	1	1			00008870
5	17	2	50016	70001	16 30 0	16 0 0	0	1			08880000
t t											00008890
		ADTA FR									00008900
1 7		NATURE	SOURCE		LENGTH	INTERVAL	START	TOTAL	SE	Т	00008910
5	18	0	70001	60012	16 2 0	16 0 0	1	1			00008920
5	19	2	50018	70001	16 14 0	16 0 0	0	1			00008930
11						_					00008940
	EAD				, FF02, FF0						00008950
1 1		NATURE	SOURCE		LENGTH	INTERVAL	START	TOTAL	SE	T	00008960
5	20	0	70001	380	16 2 0	16 1 0	1	3			00008970
.5	21	2	50020	70001	16 14 0	16 0 0	0	3			00008980
11	/		A1	<u> </u>							00008990
' 'R	EAD	FROM FA	.u1, FA0	z, FAU3	· -						00009000

1.1	RAT	E GYRO	ASSEMBI	ĽΥ								00009010
1 7	FA	MDM DIS	SCRETES									00009020
1.1	N	ATURE	SOURCE	SINK	LENGTH	INTE	RVAL	START	TOTAL	SE	\mathbf{T}	00009030
5	22	Q	70001	381	16 6 0	16	1 0	1	3			00009040
5	23	2	50022	70001	16 18 0	16	0 0	0	3			00009050
7 1												00009060
11R	EAD F	ROM FA	04									00009070
1.1				N FEEDB.	ACKS (ASA)							00009080
1 1			SCRETES									00009090
11	N	ATURE	SOURCE	SINK	LENGTH	INT	ERVAL	START	TOTAL	SE	\mathbf{T}	00009100
5	24	0	70001	60016	16 6 0	16	0 0	I	1			00009110
5	25	2	50024	70001	16 26 0	16	0 0	0	1			00009120
7 7												00009130
' ' R	EAD F	ROM FA	01, FA02	2 -								00009140
1.1			H POINT		E (LCA)							00009150
1.1	Ŋ	IATURE	SOURCE	SINK	LENGTH	INT	ERVAL	START	TOTAL	SE	T	00009160
5	26	0	70001	381	16 2 0	16	1 0	1	2			00009170
5	27	2	50026	70001	16 12 0	16	0 0	0	2			00009180
1 1												00009190
ľľ	CC FC	R REDUI	NDANT SI	EΤ								00009200
TT	N	IATURE	SOURCE	SINK	LENGTH	INT	ERVAL	START	TOTAL	SE	T	00009210
5	28	0	383	384	16 256 0	16	0 0	0	1			00009220
1.1												00009240
''R	EAD I	ISPLAY	FORMAT	FROM M	ASS MEMORY							00009250
''N	OT US	ED IN	ALT									00009260
1.1	N	IATURE	SOURCE	SINK	LENGTH	INT	ERVAL	START	TOTAL	SE	T	00009270
1 1	30	0	70001	110002	16 2 0	16	0 0	1	1			00009280
1 1	31	2	50030	70001	16 1024 0	16	0 0	0	1			00009290
1 1												00009300
	EAD I	ERFORM	ANCE DAT	ra from	PCMMU							00009310
1 1	ħ	IATURE	SOURCE	SINK	LENGTH		ERVAL	START	TOTAL	SE	T	00009320
5	32	0	70001	60095		16	1 0	1	1			00009330
5	33	2	50032	70001	16 256 0	16	0 0	0	l			00009340
1 1												00009350
			1, FF02		-							00009360
11			TROL REC									00009370
11			SCRETES									00009380
1 1		IATURE	SOURCE		LENGTH		ERVAL	START	TOTAL	SE	Т	00009390
5	50	0	70001	380	16 52 0	16	0 0	0	3			00009400
11												00009410
			DISCRE					a			_	00009420
11		NATURE			LENGTH		ERVAL	START		SE	Т	00009430
5	51	0	70001	60012	16 48 0	16	0 0	0	1			00009440
												00009450
			FF01,	-					mom. 1			00009460
11		NATURE		SINK	LENGTH		ERVAL	START		SE	T	00009470
5	52	0	70001	380	16 4 0	1.6	0 0	0	3			00009480
	m	ma = 1.0	1 71.00	B100	7407							00009490
			-		FA04 -							00009500
T 1	AEI	(O SURF	ACE SER	VO AMPL	IFIER (ASA)							00009510

1.1	FA MDM DI	SCRETES								00009520
1 1	NATURE	SOURCE	SINK	LENGTH	INTERVAL	START	TOTAL	SE	Т	00009530
5	53 0	70001	381	16 36 0	16 0 0	0	4			00009540
1 1										00009550
7	RITE TO DDU	J1, DDU2								00009560
1 1	AVVI	•								00009570
1 1	AMI									00009580
1 1	ADI									00009590
1.1	HSI									00009600
t 1	SPI									00009610
1 1	NATURE	SOURCE	SINK	LENGTH	INTERVAL	START	TOTAL	SE	T	00009620
5	54 0	70001	382	16 72 0	16 0 0	0	2			00009630
1 1										00009640
* * W	RITE TO DEL	J1, 2, Al	ND 3	(TASK 34)						00009650
1 7	NATURE	SOURCE	SINK	LENGTH	INTERVAL	START	TOTAL	SE	T	00009660
5	55 0	70001	60001	16 1024 0	16 0 0	1	1			00009670
5	56 0	70001	60002	16 1024 0	16 0 0	1	1			00009680
5	57 0	70001	60003	16 1024 0	16 0 0	1	1			00009690
1 1										00009700
	RITE PRIME) PCMMU							00009710
1 1	NATURE	SOURCE	SINK	LENGTH	INTERVAL	START	TOTAL	SE	Τ	00009720
5	58 0	70001	60095	16 512 0	16 0 0	0	1			00009730
1 1										00009740
	EAD KEYBD 1									00009750
1 1	NATURE	SOURCE	SINK	LENGTH	INTERVAL	START	TOTAL	SE	T	00009760
5	59 0	60027	70001	434 0 0	16 0 0	0	1			00009770
5	60 2	50059	60001	433 0 0	16 1 0	0	1			00009780
11										00009790
11							 .		_	00009800
	*** DEVICES	3 ******	*****	*******	*********	******	*****	****	*	00009810
11										00009820
11					AS THE ORI		CERMINUS	FOR		00009830
11	DATA TE	RANSMISS.	ION ARE	REPRESENTE	D AS DEVICE	iS.				00009840
	70D7 137 D7 D6	IMPONTA I	D.T. N.O.	1						00009850
, , D	ISPLAY ELEC		JNIT NO				a			00009860
T 1	*	SHARE	RECOR		RANSMISSION		RESET			0000987u
		CLASS	SIZE			UTPUT	PERIOD			00009880
6	1 1	1	8192		120	62	0			00009890
	TODIAN PIEC	י הדוגאמיים	TMTM NO	0						00009900 00009910
11	ISPLAY ELEC				'D 431034777777	n ame	DECEM			
1.1	A/D S	SHARE CLASS	RECOR SIZE		RANSMISSION		RESET			00009920 00009930
	? 1					UTPUT	PERIOD			
6	2 1	1	8192		120	62	0			00009940 00009950
	ISPLAY ELEC	ייים אודריי	JNIT NO	2						00009950
11		SHARE	RECOR		RANSMISSION	ወ ለጥም	RESET			00009970
7.1		CLASS	SIZE			UTPUT	PERIOD			00009970
6	3 1	1	8192		.NPU1 U 120	62	0			00009990
11	J I	T	0137		1.40	02	U			00009990
itr	ISPLAY ELEC	'''' ምክር ነ	יואדי אורי	<i>I</i> .						00010000
L	TOT TUTTER	TIMITO I	TATE MO	• 7						50010010

1.1		A/D	SHARE	RECORD	TRANSMISSION RATE	RESET	00010020
1.1			CLASS	SIZE	INPUT OUTPUT	PERIOD	00010030
6	4	1	1	8192	120 62	0	00010040
	-	_	IT NO.				00010050
	0 - 0 - 11	A/D	SHARE	RECORD	TRANSMISSION RATE	RESET	00010060
11		H/D	CLASS	SIZE	INPUT OUTPUT	PERIOD	00010070
	-	-			38 0	0	08001000
6 1,1	5	1	1	8192	30 0	U	00010000
				•			
	DISPL		IIT NO.			D-450	00010100
† 1		A/D	SHARE	RECORD	TRANSMISSION RATE	RESET	00010110
1 1			CLASS	SIZE	TUPUT TUPUT	PERIOD	00010120
6	6	1	1	8192	38 0	0	00010130
1 1							00010140
1.1	DISPL	AY UN	IIT NO.	3			00010150
1 1		A/D	SHARE	RECORD	TRANSMISSION RATE	RESET	00010160
1.1			CLASS	SIZE	INPUT OUTPUT	PERIOD	00010170
6	7	1	1	8192	38 0	0	00010180
11	•	_	_				00010190
1.1	ntspt	AV IIN	IIT NO.	Δ			00010200
1.1	D T D T 14	A/D	SHARE	RECORD	TRANSMISSION RATE	RESET	00010210
1 1		A/D	CLASS	SIZE	INPUT OUTPUT	PERIOD	00010220
6	8	1	1	8192	38 0	0	00010230
11	0	7	1	0172	38 0	U	00010240
		T) 7 77 77 77 77 77 77 77 77 77 77 77 77	n /nnwa	minterior (Mout)	777 1		00010240
11	MULTI			TIPLEXER (MDM)	FF1	DDONG	
		A/D	SHARE	RECORD	TRANSMISSION RATE	RESET	00010260
1 1			CLASS	SIZE	INPUT OUTPUT	PERIOD	00010270
6	9	1	1	1024	120 120	0	00010280
1 1							00010290
1.1	MULTI	PLEXE	ER/DEMUI	TIPLEXER (MDM)	FF2		00010300
1 1		A/D	SHARE	RECORD	TRANSMISSION RATE	RESET	00010310
1 1			CLASS	SIZE	INPUT OUTPUT	PERIOD	00010320
6	10	1	1	1024	120 120	0	00010330
11							00010340
1 1	MULTI	PLEXE	ER/DEMUI	TIPLEXER (MDM)	FF3		00010350
1.1		A/D	SHARE	RECORD	TRANSMISSION RATE	RESET	00010360
T T		, -	CLASS	SIZE	INPUT OUTPUT	PERIOD	00010370
6	11	1	1	1024	120 120	0	00010380
11		•	-	-0		_	00010390
1.1	דיר זווא	יעם זם	rp /nemiii	LTIPLEXER (MDM)	FF4		00010400
11		A/D	SHARE	RECORD	TRANSMISSION RATE	RESET	00010410
1 1		A/D	CLASS	SIZE	INPUT OUTPUT	PERIOD	00010420
	12	1		1024	120 120	0	00010430
6	12	1	1	1024	1:0 120	U	00010440
		D	/	mining (MNM)	EA 1		00010440
11				LTIPLEXER (MDM)	FA1	RESET	00010430
11		A/D	SHARE	RECORD	TRANSMISSION RATE		
		_	CLASS	SIZE	INPUT OUTPUT	PERIOD	00010470
6	13	1	1	1024	120 120	0	00010480
11							00010490
				LTIPLEXER (MDM)	FA2		00010500
1 1		A/D	SHARE	RECORD	TRANSMISSION RATE	RESET	00010510

t t			CLASS	SIZE		INPUT	OUTPUT	PERIOD	00010520
6	14	1	1	1024		120	120	0	00010530
1.9									00010540
1.1	WLTI	PLEXE	R/DEMULT	IPLEXER (MDM)	FA:	3			00010550
1 1		A/D	SHARE	RECORD		TRANSMIS	SSION RATE	RESET	00010560
T 7			CLASS	SIZE		INPUT	OUTPUT	PERIOD	00010570
6	15	1	1	1024		120	120	0	00010580
1 1									00010590
1 t	ULTI	PLEXE	R/DEMULT	IPLEXER (MDM)	FA	4			00010600
1 1		A/D	SHARE	RECORD		TRANSMIS	SSION RATE	RESET	00010610
1 1			CLASS	SIZE		INPUT	OUTPUT	PERIOD	00010620
6	16	1	1	1024		120	120	0	00010630
1 1									00010640
† † I	ISPL	AY DR	RIVER UNIT	r (DDU) NO. 1					00010650
1 1		A/D	SHARE	RECORD		TRANSMIS	SSION RATE	RESET	00010660
7 7			CLASS	SIZE		INPUT	OUTPUT	PERIOD	00010670
6	17	1	1	0		120	120	0	00010680
1.7									00010690
' ' I	DISPL	AY DE	RIVER UNI	r (DDU) NO. 2					00010700
1 1		A/D	SHARE	RECORD		TRANSMI	SSION RATE	RESET	00010710
1.1			CLASS	SIZE		INPUT	OUTPUT	PERIOD	00010720
6	18	1	1	0		120	120	0	00010730
1 7									00010740
ן יי	DISPL	AY DE	RIVER UNI	r (DDU) NO. 3					00010750
1.1		A/D	SHARE	RECORD		TRANSMI	SSION RATE	RESET	00010760
1 1			CLASS	SIZE		INPUT	OUTPUT	PERIOD	(10010770
6	19	1	1	0		120	120	0	00010780
1 1									00010790
' ' 1	WLTI	PLEXE	R/DEMULT	IPLEXER (MDM)	or1				00010800
1 1		A/D	SHARE	RECORD		TRANSMIS	SSION RATE	RESET	00010810
T F			CLASS	SIZE		INPUT	OUTPUT	PERIOD	00010820
6	20	1	1	1024		120	120	0	00010830
TT									00010840
1 1	WLTI	PLEXE	R/DEMULT	IPLEXER (MDM)	OF2				00010850
1.1		A/D	SHARE	RECORD		TRANSMI	SSION RATE	RESET	00010860
1 1			CLASS	SIZE		INPUT	OUTPUT	PERIOD	00010870
6	21	1	1	1024		120	120	0	00010880
1 1									00010890
	WLTI		ER/DEMULT	IPLEXER (MDM)	OF3				00010900
1 1		A/D	SHARE	RECORD			SSION RATE	RESET	00010910
1 1			CLASS	SIZE		INPUT	OUTPUT	FERIOD	00010920
6	22	1	1	1024		120	120	0	00010930
1.1									00010940
	MULTI			IPLEXER (MDM)	OF4				00010950
1 7		A/D	SHARE	RECORD			SSION RATE	RESET	00010960
1 1			CLASS	SIZE		INPUT	OUTPUT	PERIOD	00010970
ń	23	1	1	1024		120	120	0	00010980
Y 1									00010990
	MULTI			IPLEXER (MDM)	OAl				00011000
1 1		A/D	SHARE	RECORD		TRANSMI	SSION RATE	RESET	00011010

									11000
11			CLASS	SIZE		INPUT	OUTPUT	PERIOD	00011020
6	24	1	1	1024		120	120	0	00011030
			. /		• • •				00011040
11				PLEXER (MDN	1) OA2	MD ANCM T	ርርፓርክ ከለጥ።	DECEM	00011050
11		A/D	SHARE	RECORD			SSION RATE	RESET	00011060
			CLASS	SIZE		INPUT	OUTPUT 120	PERIOD	00011070 00011080
6	25	1	1	1624		120	120	0	00011080
		3 T 17 . FT 7	D /DEMISTRE	nieven /MDN	4) A42				00011090
• •				PLEXER (MDN	4) OA3	መከ ለ እና ር እና ለ	SSION RATE	RESET	00011100
7 1		A/D	SHARE	RECORD SIZE		INPUT	OUTPUT	PERIOD	00011110
	26	1	CLASS 1	1024		120	120	0	00011120
6		1	7	1024		120	120	U	00011130
		ינו ממי	NIT (KBU)	NO 1					00011140
1 1		W/D	SHARE	NO. 1 RECORD		ጥኮ ለእነ ሮሐ ፐ	SSION RATE	RESET	00011150
1 1		A/D	CLASS	SIZE		INPUT	OUTPUT	PER 10D	00011100
6	27	1	LLASS 1	31ZE 0		G	1	I	00011170
11		T	т	U		U	<u> </u>	1	00011180
t i	VEVRA.	מז מסו	NIT (KBU)	NO. 2					00011190
1 1		A/D	SHARE	RECORD		TRANSMI	SSION RATE	RESET	00011200
1 1	ı	A) D	CLASS	SIZE		INPUT	OUTPUT	PERIOD	06011210
6	28	1	1	0		0	1	1	00011230
11		1	-	Ū		Ü	±	±	00011240
1 1	'KEYBO	ARD III	NIT (KBU)	NO. 3					00011250
1.1		A/D	SHARE	RECORD		TRANSMI	SSION RATE	RESET	00011260
1	ı	227 20	CLASS	SIZE		INPUT	OUTPUT	PERIOD	00011270
6	29	1	1	0		0	1	1	00011280
Ť.		_	_	Ū		Ţ	_		00011290
1	PULSE	CODE	MODULATI	ON MASTER I	UNIT (PCMMU) N	0.1		00011300
1		A/D	SHARE	RECORD	•	•	SSION RATE	RESET	00011310
•	i	•	CLASS	SIZE		INPUT	OUTPUT	PERIOD	00011320
6	95	1	1	2048		120	120	0	00011330
1 1	,								00011340
T	'PULSE	CODE	MODULATI	ON MASTER I	INIT (PCMMU) N	0. %		00011350
•	t	A/D	SHARE	RECORD		TRANSMI	SSION RATE	RESET	00011360
7	ř		CLASS	SIZE		INF JT	OUTPUT	PERIOD	00011370
6	96	1	1	2048		120	120	0	00011380
1									00011390
•									00011400
		MEMOR'	Y UNITS *	*****	*****	*****	********	*****	
1									00011420
t		THE G	PC CORE M	EMORIES AR	E REPR	ESENTED	AS MEMORY U	NITS.	00011430
,									00011440
	'MEMOR'								00011450
-		SP	EED FACTO	R	PAGES				00011460
7			1.4		125				00011470
		_	_						00011480
	MEMOR								00011490
		SP	EED FACTO	R	PAGES				00011500
7	2		1.4		125				00011510

11	00011520
''MEMORY GPC 3	00011530
'' SPEED FACTOR PAGES	00011540
7 3 1.4 125	00011550
11	00011560
* MEMORY GPC 4	00011570
'' SPEED FACTOR PAGES	00011570
7 4 1.4 125	00011500
11 123	00011590
11	
	00011610
****** STORAGE UNITS *****************************	
	00011630
"' MASS MEMORIES ARE REPRESENTED AS STORAGE UNITS.	00011640
11	00011650
''MASS MEMORY STORAGE (MM) NO. 1	00011660
'' A/D SHARE CYCLE TRX RATE CAPACITY ACCESS PERIOD	00011670
8 1 1 1 0 125 17000000 399 500 0 0	00011680
11	00011690
''MASS MEMORY STORAGE (MM) NO. 2	00011700
'' A/D SHARE CYCLE TRX RATE CAPACITY ACCESS PERIOD	00011710
8 2 1 1 0 125 17000000 399 500 0 0	00011720
11	00011720
TI	00011730
*	
††	00011750
THE CPU OF EACH GPC IS REPRESENTED AS A PROCESSOR. HOWEVER,	
ONE TO ACCULATE EMPLOYED IN STMIT ACTIC DOS CHACCION EXECUTION	00011770
ONE IS ACTUALLY EMPLOYED IN SIMULATING DPS FUNCTION EXECUTION.	00011780
one is actuable emploted in simulating DFS function execution.	00011780 00011790
''CENTRAL PROCESSING UNIT (CPU) NO. I	00011780 00011790 00011800
''CENTRAL PROCESSING UNIT (CPU) NO. I '' SPEED CLASS INTERRUPT SWITCH VIRT MACH CONNECTED MEMORIE	00011780 00011790 00011800 cs 00011810
''CENTRAL PROCESSING UNIT (CPU) NO. I '' SPEED CLASS INTERRUPT SWITCH VIRT MACH CONNECTED MEMORIE 9 1 0.48 10 5 0 1 1	00011780 00011790 00011800 00011810 00011820
''CENTRAL PROCESSING UNIT (CPU) NO. I ''SPEED CLASS INTERRUPT SWITCH VIRT MACH CONNECTED MEMORIE 9 1 0.48 10 5 0 1 1	00011780 00011790 00011800 00011810 00011820 00011830
''CENTRAL PROCESSING UNIT (CPU) NO. I ''SPEED CLASS INTERRUPT SWITCH VIRT MACH CONNECTED MEMORIE 9 1 0.48 10 5 0 1 1 ''CENTRAL PROCESSING UNIT (CPU) NO. 2	00011780 00011790 00011800 00011810 00011820 00011830 00011840
''CENTRAL PROCESSING UNIT (CPU) NO. 1 ''SPEED CLASS INTERRUPT SWITCH VIRT MACH CONNECTED MEMORIE 9 1 0.48 10 5 0 1 1 ''CENTRAL PROCESSING UNIT (CPU) NO. 2 ''SPEED CLASS INTERRUPT SWITCH VIRT MACH CONNECTED MEMORIE	00011780 00011790 00011800 00011810 00011820 00011830 00011840
''CENTRAL PROCESSING UNIT (CPU) NO. I ''SPEED CLASS INTERRUPT SWITCH VIRT MACH CONNECTED MEMORIE 9 1 0.48 10 5 0 1 1 ''CENTRAL PROCESSING UNIT (CPU) NO. 2 ''SPEED CLASS INTERRUPT SWITCH VIRT MACH CONNECTED MEMORIE 9 2 0.48 10 5 0 2 2	00011780 00011790 00011800 00011810 00011820 00011830 00011840 00011850 00011860
''CENTRAL PROCESSING UNIT (CPU) NO. I ''SPEED CLASS INTERRUPT SWITCH VIRT MACH CONNECTED MEMORIE 9 1 0.48 10 5 0 1 1 ''CENTRAL PROCESSING UNIT (CPU) NO. 2 ''SPEED CLASS INTERRUPT SWITCH VIRT MACH CONNECTED MEMORIE 9 2 0.48 10 5 0 2 2	00011780 00011790 00011800 00011810 00011820 00011830 00011840 00011850 00011860 00011870
''CENTRAL PROCESSING UNIT (CPU) NO. I ''SPEED CLASS INTERRUPT SWITCH VIRT MACH CONNECTED MEMORIE 9 1 0.48 10 5 0 1 1 ''CENTRAL PROCESSING UNIT (CPU) NO. 2 ''SPEED CLASS INTERRUPT SWITCH VIRT MACH CONNECTED MEMORIE 9 2 0.48 10 5 0 2 2 ''CENTRAL PROCESSING UNIT (CPU) NO. 3	00011780 00011790 00011800 00011810 00011820 00011830 00011840 00011850 00011860
''CENTRAL PROCESSING UNIT (CPU) NO. I ''SPEED CLASS INTERRUPT SWITCH VIRT MACH CONNECTED MEMORIE 9 1 0.48 10 5 0 1 1 ''CENTRAL PROCESSING UNIT (CPU) NO. 2 ''SPEED CLASS INTERRUPT SWITCH VIRT MACH CONNECTED MEMORIE 9 2 0.48 10 5 0 2 2	00011780 00011790 00011800 00011810 00011820 00011830 00011840 00011850 00011860 00011870 00011880
''CENTRAL PROCESSING UNIT (CPU) NO. I ''SPEED CLASS INTERRUPT SWITCH VIRT MACH CONNECTED MEMORIE 9 1 0.48 10 5 0 1 1 ''CENTRAL PROCESSING UNIT (CPU) NO. 2 ''SPEED CLASS INTERRUPT SWITCH VIRT MACH CONNECTED MEMORIE 9 2 0.48 10 5 0 2 2 ''CENTRAL PROCESSING UNIT (CPU) NO. 3	00011780 00011790 00011800 00011810 00011820 00011830 00011840 00011850 00011860 00011870 00011880
''CENTRAL PROCESSING UNIT (CPU) NO. I ''SPEED CLASS INTERRUPT SWITCH VIRT MACH CONNECTED MEMORIE 9 1 0.48 10 5 0 1 1 ''CENTRAL PROCESSING UNIT (CPU) NO. 2 ''SPEED CLASS INTERRUPT SWITCH VIRT MACH CONNECTED MEMORIE 9 2 0.48 10 5 0 2 2 ''CENTRAL PROCESSING UNIT (CPU) NO. 3 ''SPEED CLASS INTERRUPT SWITCH VIRT MACH CONNECTED MEMORIE	00011780 00011790 00011800 00011810 00011820 00011830 00011840 00011850 00011870 00011880
''CENTRAL PROCESSING UNIT (CPU) NO. I ''SPEED CLASS INTERRUPT SWITCH VIRT MACH CONNECTED MEMORIE 9 1 0.48 10 5 0 1 1 ''CENTRAL PROCESSING UNIT (CPU) NO. 2 ''SPEED CLASS INTERRUPT SWITCH VIRT MACH CONNECTED MEMORIE 9 2 0.48 10 5 0 2 2 ''CENTRAL PROCESSING UNIT (CPU) NO. 3 ''SPEED CLASS INTERRUPT SWITCH VIRT MACH CONNECTED MEMORIE 9 3 0.48 10 5 0 3 3	00011780 00011790 00011800 00011810 00011820 00011830 00011840 00011850 00011870 00011880 00011890 00011900
''CENTRAL PROCESSING UNIT (CPU) NO. 1 ''SPEED CLASS INTERRUPT SWITCH VIRT MACH CONNECTED MEMORIE 9 1 0.48 10 5 0 1 1 ''CENTRAL PROCESSING UNIT (CPU) NO. 2 ''SPEED CLASS INTERRUPT SWITCH VIRT MACH CONNECTED MEMORIE 9 2 0.48 10 5 0 2 2 ''CENTRAL PROCESSING UNIT (CPU) NO. 3 ''SPEED CLASS INTERRUPT SWITCH VIRT MACH CONNECTED MEMORIE 9 3 0.48 10 5 0 3 3	00011780 00011790 00011800 00011810 00011820 00011840 00011850 00011860 00011870 00011880 00011890 00011910 00011920
''CENTRAL PROCESSING UNIT (CPU) NO. 1 ''SPEED CLASS INTERRUPT SWITCH VIRT MACH CONNECTED MEMORIE 9 1 0.48 10 5 0 1 1 ''CENTRAL PROCESSING UNIT (CPU) NO. 2 ''SPEED CLASS INTERRUPT SWITCH VIRT MACH CONNECTED MEMORIE 9 2 0.48 10 5 0 2 2 ''CENTRAL PROCESSING UNIT (CPU) NO. 3 ''SPEED CLASS INTERRUPT SWITCH VIRT MACH CONNECTED MEMORIE 9 3 0.48 10 5 0 3 3	00011780 00011790 00011800 00011810 00011820 00011840 00011850 00011860 00011870 00011880 00011890 00011910 00011920
''CENTRAL PROCESSING UNIT (CPU) NO. 1 ''CENTRAL PROCESSING UNIT (CPU) NO. 2 ''CENTRAL PROCESSING UNIT (CPU) NO. 3 ''CENTRAL PROCESSING UNIT (CPU) NO. 4 ''CENTRAL PROCESSING UNIT (CPU) NO. 4 ''CENTRAL PROCESSING UNIT (CPU) NO. 4	00011780 00011790 00011800 00011810 00011820 00011840 00011850 00011860 00011870 00011880 00011890 00011910 00011920
''CENTRAL PROCESSING UNIT (CPU) NO. 1 ''CENTRAL PROCESSING UNIT (CPU) NO. 2 ''CENTRAL PROCESSING UNIT (CPU) NO. 2 ''SPEED CLASS INTERRUPT SWITCH VIRT MACH CONNECTED MEMORIE 9 2 0.48 10 5 0 2 2 ''CENTRAL PROCESSING UNIT (CPU) NO. 3 ''CENTRAL PROCESSING UNIT (CPU) NO. 4	00011780 00011790 00011800 00011810 00011820 00011830 00011840 00011850 00011860 00011870 00011880 00011990 00011910 00011920 00011930 00011940 00011950
''CENTRAL PROCESSING UNIT (CPU) NO. I ''CENTRAL PROCESSING UNIT (CPU) NO. 2 ''CENTRAL PROCESSING UNIT (CPU) NO. 2 ''CENTRAL PROCESSING UNIT (CPU) NO. 2 ''CENTRAL PROCESSING UNIT (CPU) NO. 3 ''CENTRAL PROCESSING UNIT (CPU) NO. 4	00011780 00011790 00011800 00011810 00011820 00011830 00011840 00011850 00011870 00011880 00011890 00011910 00011920 00011930 00011940 00011950 00011960
''CENTRAL PROCESSING UNIT (CPU) NO. 1 ''CENTRAL PROCESSING UNIT (CPU) NO. 2 ''CENTRAL PROCESSING UNIT (CPU) NO. 2 ''SPEED CLASS INTERRUPT SWITCH VIRT MACH CONNECTED MEMORIE 9 2 0.48 10 5 0 2 2 ''CENTRAL PROCESSING UNIT (CPU) NO. 3 ''CENTRAL PROCESSING UNIT (CPU) NO. 4	00011780 00011790 00011800 00011810 00011820 00011830 00011840 00011850 00011870 00011880 00011890 00011910 00011910 00011920 85 00011930 00011940 00011950 00011970
CONE IS ACTUALLY EMPLOYED IN SIMULATING BPS FUNCTION EAECUTION. CENTRAL PROCESSING UNIT (CPU) NO. 1 CENTRAL PROCESSING UNIT (CPU) NO. 2 CENTRAL PROCESSING UNIT (CPU) NO. 2 CENTRAL PROCESSING UNIT (CPU) NO. 3 CENTRAL PROCESSING UNIT (CPU) NO. 4 CENTRAL PROCESSING U	00011780 00011790 00011800 00011810 00011820 00011830 00011840 00011850 00011860 00011870 00011880 00011990 00011910 00011910 00011920 00011930 00011940 00011950 00011950 00011970 00011980
CENTRAL PROCESSING UNIT (CPU) NO. 1 CENTRAL PROCESSING UNIT (CPU) NO. 1 CENTRAL PROCESSING UNIT (CPU) NO. 2 CENTRAL PROCESSING UNIT (CPU) NO. 2 CENTRAL PROCESSING UNIT (CPU) NO. 2 CENTRAL PROCESSING UNIT (CPU) NO. 3 CENTRAL PROCESSING UNIT (CPU) NO. 4 CENTRAL PROCESSING UNIT (CPU) NO. 3 CENTRAL PRO	00011780 00011790 00011800 00011810 00011820 00011830 00011850 00011860 00011870 00011880 00011890 00011910 00011910 00011920 35 00011930 00011940 00011950 00011950 00011970 00011980 00011990
"CENTRAL PROCESSING UNIT (CPU) NO. I "CENTRAL PROCESSING UNIT (CPU) NO. I "CENTRAL PROCESSING UNIT (CPU) NO. 2 "SPEED CLASS INTERRUPT SWITCH VIRT MACH CONNECTED MEMORIE 9 2 0.48 10 5 0 2 2 "CENTRAL PROCESSING UNIT (CPU) NO. 3 "CENTRAL PROCESSING UNIT (CPU) NO. 3 "SPEED CLASS INTERRUPT SWITCH VIRT MACH CONNECTED MEMORIE 9 3 0.48 10 5 0 3 3 "CENTRAL PROCESSING UNIT (CPU) NO. 4 "SPEED CLASS INTERRUPT SWITCH VIRT MACH CONNECTED MEMORIE 9 4 0.48 10 5 0 4 4 "EACH OF THE TRANSMISSION PATHS FOR DATA IN THE DPS IS	00011780 00011790 00011800 00011810 00011820 00011840 00011850 00011860 00011870 00011890 00011900 00011910 00011920 00011930 00011940 00011950 00011950 00011970 00011980

	NTERCO	MPUTER C	OMMUNICATIONS 1				00012020
1 1		MODE	TRANSMISSION	RATE	TIME	LAG	00012030
10	1	0	120		0		00012040
1.1							00012050
' ' I	NTERCO	MPUTER C	OMMUNICATIONS I	DATALINK	- IC2		00012060
1 1		MODE	TRANSMISSION	RATE	TIME	LAG	00012070
10	2	0	120		0		00012080
7 7							00012090
' ' I	NTERCO	MPUTER C	OMMUNICATIONS I	DATALINK	- IC3		00012100
1.1		MODE	TRANSMISSION	RATE	TIME	LAG	00012110
10	3	0	120		0		00012120
1.7							00012130
''1	NTERCO	MPUTER C	OMMUNICATIONS I	DATALINK	- IC4		00012140
7 7		MODE	TRANSMISSION		TIME	LAG	00012150
10	4	0	120		0		00012160
11	•	Ū			_		00012170
117	NTERCO	MPHTER C	OMMUNICATIONS 1	DATAT.TNK	- IC5		00012180
11		MODE	TRANSMISSION		TIME	T.AC	00012190
10	5	0	120	1111	0		00012200
1 1	_	Ü	120		Ū		00012210
ttr	TSPLAY	SYSTEM	DATALINK - DK1				00012220
11	, 401 1111	MODE	TRANSMISSION	RATE	TIME	T.AG	00012230
10	6	0	120	LULIE	0	1110	00012240
11	Ŭ	J	120		Ü		00012250
117	TCPI AV	SYSTEM	DATALINK - DK2				00012260
11	TOI DIT	MODE	TRANSMISSION	DATE	TIME	TAC	00012270
10	7	0	120	MIL	0	LHG	00012270
11	,	U	120		U		00012200
ttr	TCDT AV	V CVCTEM	DATALINK - DK3				00012290
11)TOT TWI	MODE	TRANSMISSION	D ለጥፑ	TIME	T A C	00012300
10	8	0	120	KAIE	0	LAG	00012310
11	٥	U	120		U		00012320
111	TCDT AV	/ сустем	DATALINK - DK4				00012330
11	TOLIVI	MODE	TRANSMISSION	D A W D	TIME	TAC	00012340
10	9	9405	120	KALE	0	LAG	00012350
11	9	U	120		Ų		00012300
1 t r	27 FOIIT	CDITTICAT	BUS DATALINK	EC1			00012370
11	PIGUI	MODE			TME	TAC	00012300
	10		TRANSMISSION	KAIL	TIME	LAG	00012390
10	10	0	120		0		
	T TOUR	ODTETOAT	DITC DAMAT TARE	EC3			00012410 00012420
11	LIGHT		BUS DATALINK		TTME	TAC	
	7 1	MODE	TRANSMISSION	KAIL	TIME	LAG	00012430
10	11	0	120		0		00012440
	ar teatim	ODIMIOIS	DIIO DAMAS TORIS	TIC 3			00012450
11	LIGHT		BUS DATALINK		m 7 + f+*	T 443	00012460
	7.0	MODE	TRANSMISSION	KATE	TIME	LAG	00012470
10	12	0	120		0		00012480
	* T / 100	AD TET 2 / -	Deed to American	Da '			00012490
''1	LIGHT		BUS DATALINK			. ,	00012500
1 •		MODE	TRANSMISSION	RATE	TIME	LAG	00012514

10	1 2	0	120		0		00012520
10	13	0	120		U		00012520
1 1 7	ET TOUT	CDTTTCAT	BUS DATALINK -	EC 5			00012530
11	LUTGHT	MODE	TRANSMISSION I		TIME	LAC	00012550
10	14	0	120	WILD.	0	1,110	00012560
11	**	Ü	120				00012570
ן יי	FT.TGHT	CRITTCAL.	BUS DATALINK -	FC6			00012580
11		MODE	TRANSMISSION I		TIME	LAG	00012590
10	15	0	120		0		00012600
T E					_		00012610
11]	FLIGHT	CRITICAL	BUS DATALINK -	FC7			00012620
1 1		MODE	TRANSMISSION I	RATE	TIME	LAG	00012630
10	16	0	120		0		00012640
11							00012650
	FLIGHT		BUS DATALINK -				00012660
1 1		MODE	TRANSMISSION I	RATE	TIME	LAG	00012670
10	17	0	120		0		00012680
7 1							00012690
	MASS M		ALINK - MM1				00012700
11		MODE	TRANSMISSION 1	RATE	TIME	LAG	00012710
10	18	0	120		500		00012720
		mionii nim	17.7377 10.00				00012730
11	MASS M		ALINK - MM2	D 4 m m	mT 475		00012740
	10	MODE	TRANSMISSION I	RATE	TIME	LAG	00012750
10	19	0	120		500		00012760 00012770
	MTCCTAI	ላ ሮኮፒጥፕሮል፣	L DATALINK - PL	1			00012770
11	MTSSTO	MODE	TRANSMISSION 1		TIME	TAC	00012780
10	20	MODE 0	120	KAIL	0	LAG	00012790
11	20	Ū	120		U		00012810
ן זי ז	MTSSTO	N CRITTCAT	L DATALINK - PL:	2			00012820
11	120010	MODE	TRANSMISSION)		TIME	T.AG	00012830
10	21	0	120		0	1,110	00012840
9 1		_			J		00012850
7.1	GROUND	INTERFACE	E DATALINK - LB	1			00012860
11		MODE	TRANSMISSION I		TIME	LAG	00012870
10	22	0	120		0		00012880
7.7							00012890
11	GROUND	INTERFACE	E DATALINK - LB	2			00012900
1 1		MODE	TRANSMISSION 1	RATE	TIME	LAC	00012910
10	23	0	120		0		00012920
11							00012930
	PCMMU 1	DATALINK -					00012940
11	0.4	MODE	TRANSMISSION 1	RATE	TIME	LAG	00012950
10	24	0	120		0		00012960
	DOMAT :	DATALINK -	TD 9				00012970
	J. CMMU .			ከለጥም	(P) T LATT	T A C	00012980 00012990
10	25	MODE O	TRANSMISSION 1	KAIL	TIME O	LAG	00012990
11	ر ۲	U	120		U		00013000
							00013010

' 'P	CMMU DA	TALINK ·	- IP3				00013020
1 1		MODE	TRANSMISSION	RATE	TIME	LAC	00013030
10	26	0	120		0		00013040
1 1							00013050
''P	CMMU DA	TALINK -	- IP4				00013060
1 1		MODE	TRANSMISSION	RATE	TIME	LAG	00013070
10	27	0	120		0		00013080
7 7							00013090
, , D	Ul/DEU1	DATALI	NK				00013100
1.1		MODE	TRANSMISSION	RATE	TIME	LAC	00013110
10	28	0	1		0		00013120
1 1							00013130
''D	U2/DEU2	DATALI	VΧ				00013140
1.1		MODE	TRANSMISSION	RATE	TIME	LAC	00013150
10	29	0	1		0		00013160
F T							00013170
	U3/DEU3	DATAI,II	<u>ak</u>				00013180
1 1		MODE	TRANSMISSION	RATE	TIME	LAG	00013190
10	30	0	1		0		00013200
1 1							00013210
	U4/DEU4	DATALI	NK				00013220
1 1		MODE	TRANSMISSION	RATE	TIME	LAC	00013230
10	31	0	1		0		00013240
1 1							00013250
	B1/DEU1	DATALI	ΛK				00013260
1 1		MODE	TRANSMISSION	RATE	TIME	LAC	00013270
10	32	0	1		0		00013280
1 1							00013290
	CB1/DEU3	DATALI					00013300
1.1		MODE	TRANSMISSION	RATE	TIME	LAG	00013310
10	33	Q	1		0		00013320
11							00013330
	B2/DEU2	DATALI					00013340
11		MODE	TRANSMISSION	RATE	TIME	LVC	00013350
10	34	0	1		0		00013360
							00013370
''K	:B2/DEU3	DATALI					00013380
		MODE	TRANSMISSION	RATE	TIME	LAG	00013390
10	35	0	1		0		00013400
							v0013410
' ' K	B3/DEU4	DATALI					00013420
	•	MODE	TRANSMISSION	RATE	TIME	LAG	00013430
10	36	0	1		0		00013440
							00013450
''P	CMI/INS		ATION DATALINK	F3 4 444 F-	• . a		00013460
	0.7	MODE	TRANSMISSION	RATE	MIT	LAG	00013470
10	37	0	100		0		00013480
	OMO (TOTAL	min in m	AMEON SAMES				00013490
11	'UMZ/INS		ATION DATALINK	D 4 mm	,m f 1,5**	1 4 4 4 4	00013500
• •		MODE	TRANSMISSION	KATE	TIME	LAG	00013510

10	38	3 ()		100				0					00013520
11														00013530
1 1														00013540
	***	DATA SET	rs ***	****	****	****	****	****	****	******	****	*****	***	00013550
7 7														00013560
1 1								SENT	THE	DISPLAY	IMAGES	STORED :	ΙN	00013570
7 1		EACH OF	THE T	WO M	IASS	MEMO:	RIES.							00013580
1 1														00013590
11		STORAGE	ORG	1	NIT.	SIZE	MAX	X.SI	ZE					00013600
	1	•	^		,	0000		100						00013610
I 1 I 1	1 2	1 1	0			.0000		100						00013620
1 I	2	1	0		1	0240		102	40					00013630
7 1														00013640
1144	<u>_</u>	CVCTTM (יינונטיי	TIDAT	TON	****	do alo alo alo alo		ن ماه ماه ماه ماه	عالد مالد عالد عالد عالد مالد عالد ما	ه مال ماله ماله ماله ماله ماله ماله ماله	****	111.	00013650
7.1		SISIEM (ONLTG	UKAL	TON	XXXX.	~ ~ ~ ~ ~ ·		re 26 26 26 2	*****	10 20 20 20 20 20 20 1	******	F 25 25	00013660
1.1		THE POTT	OLITHO	EOD	MC D		- mire	Tarmi	nnaai	NITI OFF TON	0 00 00			00013670
1 1		THROUGH				E L TW	E THE	TMT	ERCO	MECLION	S OF DP	S COMPONE	≦NT;	500013680
1 1		Inkouga	DATA	LINK	.o.									00013690
1.1		UNIT	דו א תו	AT TAI	מי עני	NINTE CY	PTOMP							00013700
12		60001		ALIN 28	32	MNEC. 33	TIONS							00013710
12		60001	6 7	29	34	35								00013720
12		60002	8	30	33	35 35								00013730
12		60004	9	31	36	35								00013740
12		60005	28	31	30									00013750
12		60005	29											00013760
12		60007	30											00013770
12		60008	31											00013780
12		60009	10	14						•				00013790
12		60010	11	15										00013800
12		60010	12	16										00013810 00013820
12		60012	13	17										00013820
12		60012	14	10										00013840
12		60014	15	11										00013840
12		60015	16	12										00013850
12		60016	17	13										00013860
12		60017	10	11	12	13								00013880
12		60018	10	11	12	13								00013890
12		60019	10	11	12	13								00013030
12		60020	37	38										00013910
12		60021	37	38										00013910
12		60022	37	38										00013920
12		60023	37	38										00013930
12		60024	37	38										00013950
12		60025	37	38										00013930
12		60026	37	38										00013200
12		60027	32	33										00013970
12		60028	34	35										00013900
12		60029	36											00014000
12		60095	24	25	26	27	37							00014010
		-		-	-	•								

12	60096	24 2	25 26	27	38										00014020
12	70001	1	2 3	4	5	b	7	8	9	10	11	12	13	*	00014030
			15 16	17	18	19	20	21	22	23	24				00014040
12	70002	1	2 3	4	5	6	7	8	9	10	11	12	13	*	00014050
			15 16	17	18	19	20	21	22	23	25				00014060
12	70003	1	2 3	4	5	6	7	8	9	10	11	12	13	*	00014070
			15 16	17	18	19	20	21	22	23	26				00014080
12	70004	1	2 3	4	5	6	7	8	9	10	11	12	13	*	00014090
			15 16	17	18	19	20	21	22	23	27				00014100
12	80001	18													00014110
12	80002	19													00014120
: 1															00014130
11***					.ta.tta.t.		و داد داد داد دا	ta ala ala sta	ata da ata da	ملحمال مالدماء	رار ودواروار	و د داد داد د	****	J1.	00014140
11	ALGORITHM	SELEC	CITON 3	× 17 26 76	24 26 26 26	<i>TRXX</i> :	7F 7F 7F 7F 1	кккк	7C 7C 7C 7C	7C 7C 7C 7C	****	36 16 76 1 "	* * * * * *	X X	00014150 00014160
	1A 1B 2A	. 2в	20 21	. ara	3A	3В	3C	4A	4B	5A	5B	6A			00014100
	1A 1B 2A 1 0 1		2C 2I			3B 1	3C	4A 1	45	DA O					00014170
13	1 0 1	. 1	0 (, 0	1	1	1	1	1	U	U	U			00014180
1.1															00014190
11***	VIRTUAL M	(ACUTNI	2C ****	****	***	***	****	****	***	ጵ	***	****	****	**	00014210
1 1	VIKIUAL P	GACILITIAL	40												00014210
1.1	ONLY ONE	VIRTII	AI. MACI	ITNE	TS N	EEDE	מיד ח	REP	RESE	ит т	HE D	PS F	OR TH	E	00014230
1.1	PURPOSE C												ITION.		00014240
1.1	VM'S ARE									•					00014250
1.1	GPC'S.	-1,01101		D	.,										00014260
1.1															00014270
1.1	EXEC	UTIVE	MEM	VM	SIZE		1	VN P	AGE	SIZE					00014280
14	1	1		1024					2048						00014290
14	2	2		1024	000				2048						00014300
14	3	3		1024					2048						00014310
14	4	4		1024	000				2048						00014320
END OF	DATA														

F 1

The values listed on the preceding pages in this appendix for NASA.SPECS20.DATA can also be used for the simulation with one Virtual Machine and the IMSIM specification forms NASA.SPECSIO.DATA, with the following exceptions:

```
SYSTEM SOFTWARE INTERFACE PROCESSOR
''SCHEDULED AT 40MS INTERVALS BY SYSTEM INITIALIZATION
         CLASS
                  DELAY
                            REQUIRED ELEMENTS
           1
                    0
                            30116
                                  30130
                                          30138 30147 50028 50029 *
                            50058 30 51
                                          30140 1
''ICC FOR REDUNDANT SET (GPC 2, 3, AND 4 COMMUNICATION WITH GPC 1)
      NATURE SOURCE SINK LENGTH
                                        INTERVAL
                                                   START TOTAL SE T
   28
        0
                383 70001
                           16 256 0
                                        16 0 0
                                                     0
                                                            3
5
   29
        0
              70001
                       384 16 256 0
                                        16 0 0
                                                     0
                                                            3
1 1
''CENTRAL PROCESSING UNIT (CPU) NO. 1
       SPEED CLASS INTERRUPT SWITCH VIRT MACH CONNECTED MEMORIES
    1 0.48
               10
                         5
                                   0
                                           1
                                                   I
                                                      2 3 4
7 7
''CENTRAL PROCESSING UNIT (CPU) NO. 2
       SPEED CLASS INTERRUPT
                                SWITCH VIRT MACH CONNECTED MEMORIES
1 1
    2 0.48
               10
                         5
                                   0
                                           1
                                                   2 1 3 4
1 1
''CENTRAL PROCESSING UNIT (CPU) NO. 3
1.1
              CLASS INTERRUPT SWITCH VIRT MACH CONNECTED MEMORIES
       SPEED
7 7
    3 0.48
               10
                         5
                                   0
                                           1
''CENTRAL PROCESSING UNIT (CPU) NO. 4
       SPEED CLASS INTERRUPT SWITCH VIRT MACH
                                                  CONNECTED MEMORIES
1.1
    4 0.48
               10
                         5
                                   0
                                           1
                                                  4 1 2 3
1.1
```



APPENDIX C HISTORY PRINTOUT

This appendix provides the History Printout of a simulation run with jobschedule JSCA07.

The abbreviations used in this appendix, in order of appearance, are as follows:

TUS - Time Units

TS - Task Starts

TI - Task Index (internal IMSIM index)

T X - Task in Execution
MS - Message Starts
M E - Message Ends

T W - Task in Wait state

T E - Task Ends

This printout gives the full history of the run by providing pertinent information at every time that an activity in the model takes place. This history specifies, at the time indicated, one or more of the following types of summaries:

- a. The start and finish of jobs.
- b. The start, execution, wait, and completion times of tasks, and the appropriate job number for which this task is called.
- c. For messages, the task and job number as well as the message length, transmission rate, transmission path consisting of the origin (source), bus or datalink used for transmission, and the destination (sink).

At time 1, the Executive Functions are initialized, while at time 31095, the 20 functions (tasks) for job 2 are initiated. All functions are activated at time 32000, after which the printout provides the history of all events.

1	TUS		START	AT	0	S	EC.	JOB	1			
1	TUS	TS	START		TASK		1	JOB	1	TI=701		
1	TUS	TS	START		TASK		2	JOB	1	TI=702		
	TUS	TS	START		TASK		3	JOB	1	TI=703		
	TUS	TS	START		TACK		4	JOB	1	TI=704		
	TUS	TS	START		TASK		5	JOB		TI=705		
31095			START	ΑT		.09S	_	JOB	2			
31095		TS	START		TASK		6	JOB		T1=706		
31095		TS	START		TASK		7	JOB		TI=707		
31095							8	JOB		TI=707		
		TS	START		TASK							
31095		TS	START		TASK		9	JOB		TI=709		
31095		TS	START		TASK		10	JOB		TI=710		
31095		TS	START		TASK		11	JOB		TI=711		
31095		TS	START		TASK		12	JOB		TI=712		
31095		TS	START		TASK		13	JOB		TI=713		
31095		TS	START		TASK		14	JOB		TI=714		
31095		TS	START		TASK		15	JOB		TI=715		
31095	TUS	TS	START		TASK		19	JOB	2	TI=716		
31095	TUS	TS	START		TASK		20	JOB	2	TI=717		
31095	TUS	TS	START		TASK		21	JOB	2	TI=718		
31095	TUS	TS	START		TASK		22	JOB	2	TI=719		
31095	TUS	TS	START		TASK		23	JOB	2	TI=720		
31095	TUS	TS	START		TASK		24	JOB	2	TI=721		
31095		TS	START		TASK		32	JOB	2	TI=722		
31095		TS	START		TASK		34	JOB	2	TI=723		
31095		TS	START		TASK		35	JOB		TI=724		
31095		TS	START		TASK		37	JOB		TI=725		
32001		тx	EXECU:	TNC	TASK		7	JOB		TI=707		
32001			START	28	TASK		7	JOB		TI=707	I ENCTH	RATE
J2001	103	MJ	PATH	7000		1	•	70001	-	11-707	256	120
32001	THE	мс	START	29	TASK	•	7	JOB	2	TI=707		RATE
JEGGI	100	110	PATH	7000		2	•	70004	_	11 /0/	256	120
32001	THE	MC	START	58	TASK	-	7	JOB	7	TI=707		RATE
32001	103	rio	PATH	7000		24		60095	-	110/0/	512	120
32003	THE	M E	END	28	TASK	24	7	JOB	2	TI=707	114	120
				29								
32003			END MSG W	-	TASK		7	JOB		TI=707		
32003		T W			TASK		7	JOB		TI=707		
32003		TX	EXECU.		TASK		6	JOB		TI=706	T PACTE	D A TEE
32003	105	MS	START	50	TASK		6	JOB	2	TI=706		RATE
			PATH	7000		12		60011	_	m= 200	52	120
32003			END	50	TASK		6	JOB		TI=706	T 7110711	D 1 mm
32003	102	MS	START	51	TASK		6	JOB	2	TI=706		RATE
			PATH	7000		13		60012		m= 704	48	120
32003					TASK		6	JOB	2	TI=706		
32003	TUS	MS	START		TASK		6	JOB	Z	T.T=\00		
			PATH	7000	T	12	_	60011	_		4	120
32003			END				6	JOB	2	TI=706		
32003	TUS	MS			TASK			JOB				
			PATH			13		60016			36	120
32003	TUS	M E			TASK		6	JOB	2	TI=706		
32003	TUS	MS	START	54	TASK		6	JOB	2	TI=706	LENGTH	RATE
			PATH	7000	1	10		60018			72	120
32003	TUS	M E	END				6	JOB	2	TI=706		
32003	TUS	MS	START	6	TASK		6					RATE
			PATH	7000	l	12		60011			12	120
32003	TUS	M E	END		TASK		6	JOB JOB	2	TI = 706		
32003	TUS	M E MS	START				6	JOB	2	TI=706	LENGTH	RATE
			PATH	7000	1	13		60012			2	120
32003	TUS	M E	END	8	TASK							
32003	TUS	M E MS	END START	10	TASK		6	JOB JOB	2	T1=706	LENGTH	RATE
-							-					

	PATH 70001 END 10 TASK START 12 TASK PATH 70001 END 12 TASK START 14 TASK PATH 70001 END 14 TASK START 16 TASK PATH 70001	12	60011	2 120)
32003 TUS M E	END 10 TASK	6	JOB	2 TI=706	
32003 TUS MS	START 12 TASK	6	JOB	2 TI=706 LENGTH RATE	2
	PATH 70001	10	60009	12 120)
32003 TUS M E	END 12 TASK	6	JOB	2 TI=706	_
32003 TUS MS	START 14 TASK	. 6	708	2 T1=706 LENGTH RATE	5
22002 THE M F	PAIH /UUUI	11	10B 00010	2 TI-706	,
32003 TUS MS	END 14 IASK START 16 TASK	6	JOB JOB	2 TI=700 I FNCTH RATE	•
J2003 103 H3	PATH 70001	12	11008	10 120	,)
32003 TUS M E	END 16 TASK	6	JOB	2 TI=706	
32003 TUS MS	START 18 TASK	6	JOB	2 TI=706 LENGTH RATE	2
	PATH 70001	13	60012	2 120)
32003 TUS M E	END 18 TASK	6	AOL	2 TI=706	
32003 TUS MS	START 20 TASK	6	JOB	2 TI=706 LENGTH RATE	
22222 200 11 2	PATH 70001	12	60611	2 120)
32003 TUS M E	END 20 TASK	6	TOR	2 T1=700 2 TY=706 TENCTH DATE	,
32003 105 MS	DATH 70001	17	60015	2 11-700 LENGIN RATE	٠ ١
32003 TUS M E	END 22 TASK	6	JOB	2 TI=706	•
32063 TUS MS	START 24 TASK	6	JOB	2 TI=706 LENGTH RATE	į
	PATH 70001	13	60016	6 120)
32003 TUS M E	END 24 TASK	б	JOB	2 TI=706	
32003 TUS MS	START 26 TASK	6	JOB	2 TI=706 LENGTH RATE	1
	PATH 70001	11	60014	2 120)
32003 TUS M E	END 26 TASK	6	JOB	2 T1=706	
32003 TOS MS	START / TASK	12	70001	2 11=/UB LENGTH KAIR	
32003 THS M E	FAIR OUGII FND 7 TASK	12	.10B	2 TI=706	,
32003 TUS MS	START 9 TASK	6	JOB	2 TI=706 LENGTH RATE	
	END 14 TASK START 16 TASK PATH 70001 END 16 TASK START 18 TASK PATH 70001 END 18 TASK PATH 70001 END 20 TASK PATH 70001 END 20 TASK START 22 TASK PATH 70001 END 22 TASK START 24 TASK PATH 70001 END 24 TASK START 26 TASK PATH 70001 END 26 TASK START 7 TASK PATH 60011 END 7 TASK START 9 TASK PATH 60012 END 9 TASK START 11 TASK PATH 60011 END 11 TASK PATH 60009 END 13 TASK PATH 60009 END 13 TASK PATH 60010 END 15 TASK PATH 60010 END 15 TASK PATH 60011 END 15 TASK PATH 60011 END 15 TASK PATH 60010 END 15 TASK PATH 60011 END 17 TASK PATH 60011	13	70001	24 120)
32003 TUS N E	END 9 TASK	6	JOB	2 TI=706	
32003 TUS MS	START 11 TASK	6	JOB	2 TI=706 LENGTH RATE	÷
	PATH 60011	12	70001	28 120)
32003 TUS M E	END 11 TASK	6	JOB	2 TI=706	,
32003 TUS MS	START 13 TASK	10	70001	2 11=706 LENGIN RAIF	, 1
32003 TUS M F	FND 13 TASK	10 6	.10007	2 TI=706	,
32003 TUS MS	START 15 TASK	6	JOB	2 TI=706 LENGTH RATE	2
• • • • • • • • • • • • • • • • • • • •	PATH 60010	11	70001	34 120)
32003 TUS M E	END 15 TASK	6	JOB	2 TI=706	
32003 TUS MS	START 17 TASK	6	JOB	2 TI=706 LENGTH RATE	
	PATH 60011	12	70001	30 120)
32003 TUS M E	END 17 TASK	6	JOB	2 T1=706	
32003 TUS MS	START 19 TASK PATH 60012	6 13	70001	2 TI=706 LENGTH RATE 14 120	1
32003 TUS M E	END 19 TASK	1.5	TOR	2 TI=706	,
32003 TUS NS	START 21 TASK	6	JOB	2 TI=706 LENGTH RATE	<u>:</u>
* · · · · · · ·	PATH 60011	12	70001	14 120	
32003 TUS M E	END 21 TASK	6		2 TI=706	
32003 TUS MS	START 23 TASK	6		2 TI=706 LENGTH RATE	
**	PATH 60015	12		18 120	;
32003 TUS M E 32003 TUS MS	END 23 TASK	6		2 TI=706	
	START 25 TASK	6 13	JOB 70001		
J200J 100 AB	PATH ADDIA	L J	7,000,1	20 120	•
	PATH 60016 END 25 TASK	6	JOB	2 T1=706	
32003 TUS M E	END 25 TASK	6 6		2 TI=706 2 TI=706 LENGTH RATE	ć
				2 TI=706 LENGTH RATE	
32003 TUS M E	END 25 TASK START 27 TASK	6	ЈОВ 70001	2 TI=706 LENGTH RATE 12 126 2 TI=706	
32003 TUS M E 32003 TUS MS	END 25 TASK START 27 TASK PATH 60014	6 11	ЈОВ 70001	2 TI=706 LENGTH RATE 12 120	

32005	TUS	T	:	INTERF	RUPT	TASK		6	JOB		TI=706		
32005	ŢŲS	T	Х	EXECUT START	ING	TASK		7	JOB JOB	2	TI=707		
32005	TUS	MS		START				7	JOB	2	TI=/0/		
22225	mua			PATH	7000	3 m.c.v	1		70001			256	120
32005	TUS	MS		START PATH	2000	TASK 1	2	7	JOB 70003				
32007						TASK			מחז	2	TT=707	230	120
32007	TUS	ME		END	20	TASK		7	JOB JOB	2	TT=707		
32007	TUS	MS		START	28	TASK		7	JOB	2	TI=707	LENGTH	RATE
32007	100	114		PATH	7000	2	1	•	70001	_			120
32007	TUS	MS		START	29	TASK	_	7	JOB	2			
	_			PATH	7000	1	2		70002			256	120
32009	TUS	ΜЕ		END	28	TASK		7	JOB	2	TI=707		
32009	TUS	ME		END	29	TASK		7	308	4	TI=707		
32009	TUS	T	E	END		TASK		7	JOB	2	TI=707 TI=706		
32009		Т	Х	EXECUI	ING	TASK			JOB	2	TI=706		
32014	TUS	MS		START	50	TASK		6	JOB	2	TI=706	LENGTH	RATE
				PATH	7000	l 	11	_	60010	_		52	120
32014	TUS	M E		END	50	TASK		6	JOB	2	T1=/06	7 PMORIL	rs a mirr
32014	108	MS		START	7000	TASK	11	0	JUB	2	T1=/06	LENGIA	120
22014	TITE	мЕ		FND	7000	ጥላሮኒ T	11	a	10.8	2	TI-706	4	120
32014	TUS	MS		STADT	52 53	TACK		6	JOB	2	TT=706	TENCCH	RATE
34017	100	110		PATH	7000	1	12	Ŭ	60015	-	11-700	36	120
32014	TUS	M E		END	53	TASK		6	JOB	2	TI=706	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	1-4
32014	TUS	MS		START	54	TASK		6	JOB	2	TI=706	LENGTH	RATE
				PATH	7000	1	10		JOB 60010 JOB JOB JOB JOB 60015 JOB JOB 60017 JOB JOB			72	120
32014	TUS	M E		END	54	TASK		6	JOB	2	TI=706		
32014	TUS	MS		START	6	TASK		6	JOB	2	TI=706	LENGTH	RATE
				PATH	7000	1	11		60010	_		12	120
32014	TUS	ME		END START	6	TASK		6	JOB	2	TI=706	* P111/200147	D 4 mm
32014	TUS	MS		START	10	TASK	1 1	6	JOB	2	T1=/06	LENGTH	RATE
22014	THE	мв		PATH	1000	ጥለፍኮ I	11	۷.	60010 JOB JOB 60010 JOB JOB	2	TT-706	2	120
32014	PILL	MC		CTADT	20	YZAT		6	AOL	2	TI=706	LENCTH	DATE
J2014	105	110		END START PATH	7000	1131	11	·	60010	-	11-700	2	120
32014	TUS	мЕ		END	20	TASK		6	JOB	2	TI=706	_	
32014	TUS	MS		END START PATH	22	TASK		6	JOB JOB	2	TI=706	LENGTH	RATE
	_			PATH	7000	1	11		60014			6	120
32014	TUS	ΜE		END	22	TASK		6	60014 JOB JOB 60013	2	T1=706		
32014	TUS	MS		START	26	TASK		6	JOB	2	TI=706	LENGTH	RATE
				PATH	7000	1	10		60013			2	120
J = 0 1	100				~ ~			•		_			
32014	TUS	MS		START				ь	JOR		TI=706		
20017	m110	=		PATH		_	10		60009	2	TT-706	52	120
32014				END		TASK		6	JOB JOB	2	11=700 Tt=704	LENGTH	RATE
32014	102	115		START PATH		TASK 1	10	6	60009			LENGIH 4	120
32014	THS	мв				TASK	10	6	JOB				140
32014				START				6	JOB	2	T1=706	LENGTH	RATE
J201	.00			PATH			11	-	60014			36	120
32014	TUS	ΜE				TASK		6	JOB	2	TI=706		
32014	TUS	MS		START				6	JOB	2	TI=706	LENGTH	RATE
				PATH	6001	0	11		70001			56	120
32014						TASK		6	JOB				
32014	TUS	MS		START				6	JOB		T1≈706		
				PATH			11	_	70001		m+ =0.	28	120
32014				END		TASK		6					DAME
32014	TUS	MS		START			11		JOB		11=706		RATE
				PATH	9001	U	11		70001			14	120

32014 TUS M E	END 21 TASK	6				
32014 TUS MS		6	-			
	PATH 60014	11	70001		18	120
32014 TUS M E	end 23 TASK	6		2 TI=706		
32014 TUS MS	START 27 TASK	6	JOB	2 TI=706	LENGTH	
	PATH 60013	10	70001 JOB		12	120
32014 TUS M E	END 27 TASK	6				
32014 TUS MS	START 53 TASK	6		2 TI=706		
	PATH 70001	10	60013 ЈОВ		36	120
32014 TUS M E 32015 TUS MS	end 53 task		JOB	2 TI≂706		
32015 TUS MS	START 6 TASK	6	JOB	2 TI=706	LENGTH	RATE
	PATH 70001	10	60009		12	120
32015 TUS M E	end 6 task	6	JOB	2 TI=706		
32015 TUS MS	START 10 TASK	6	60009 JOB JOB	2 TI=706	LENGTH	RATE
	PATH 70001	10	60009 JOB JOB		2	120
32015 TUS M E	END 10 TASK	6	JOB	2 TI=706		
32015 TUS MS	START 20 TASK			2 TI=706	LENGTH	RATE
	PATH 70001		60009		2	120
32015 TUS M E	END 20 TASK	6	JOB JOB	2 TI=706		
32015 TUS MS	START 22 TASK	6	JOB	2 TI=706	LENGTH	RATE
	PATH 70001	10	60013		6	120
32015 TUS M E	END 22 TASK	6		2 TI=706		
32015 TUS MS	START 7 TASK	6	JOB	2 TI=706	LENGTH	RATE
	PATH 60009	10	70001		56	120
32015 TUS M E	END 7 TASK	6	JOB	2 T1=706		
32015 TUS MS	START 11 TASK	6	JOB	2 TI=706	LENGTH	RATE
	PATH 60009	10	70001		28	120
32015 TUS M E	FND 11 TASK	6	JOB	2 TI=706		
32015 TUS MS	START ?1 FASK	6	JOB	2 TI=706	LENGTH	RATE
	PATH 60009	10	70001		14	120
32015 TUS N E	END 21 TASK	6		2 TI=706		
32015 TUS MS	START 23 TASK	6				RATE
	PA'H 60013	10	70001		18	120
32015 TUS M E	END 23 TASK	6	JOB	2 TI=706		
32015 TUS T E	END TASK	6	JOB	2 TI = 706		
32015 TUS T X	EXECUTING TASK	9	JOB	2 TI=709		
32017 TUS T E	END TASK	9		2 TI=709		
32017 TUS T X	EXECUTING TASK	32	JOB	2 TI=722		
32018 TUS T X	EXECUTING TASK	11	JOB	2 TI = 711		
32018 TUS T E	end task	32	JOB	2 TI=722		
32018 TUS MS	START 32 TASK PATH 70001	11	JOB	2 TI=711		
	PATH 70001	24	60095		256	120
32020 TUS M E	DND 32 TASK	1,	JUB	2 TI=711		
32020 TUS T X	EXECUTING TASK	14	JOB	2 TI=714		
32020 TUS MS	START 33 TASK	11	JOB	2 TI=711		RATE
	PATH 60095	24	70001		256	120
32020 TUS T W	MSG WAIT TASK	11	JOB	2 TI = /!1		
32020 TUS T E	end task	14	JOB	2 TI=714		
32020 TUS T X	EXECUTING TASK	10	JOB	2 TI=710		
32022 TUS M E	end 33 task	11	JOB	2 TI=711		
	INTERRUPT TASK	10	JOB	2 TI=710		
32022 TUS T X	EXECUTING TASK	11	JOB	2 T1=711		
32022 TUS T E	END TASK	11	JOB	2 TI=711		
32022 TUS T X	EXECUTING TASK	10	JOB	2 TI=710		
32031 TUS T E	END TASK	10	JOB	2 TI=710		
32031 TUS T X	EXECUTING TASK	34	JOB	2 TI=723		
32034 TUS T E	END TASK	34	JOB	2 TI=723		
32034 TUS T X	EXECUTING TASK	35	JOB	2 TI=724	I patromer	T3 A 17177
32034 TUS MS	START 55 TASK	35	JOB	2 TI=724		RATE
	PATH 70001	6	60001		1024	120

32034	TUS	MS			START	56	TASK		35	JOB	2	TI=724	LENGTH	RATE
					PATH	7000	1	7		60002 JOB 60003 JOB JOB			1024	120
32034	TUS	MS			START	57	TASK		35	JOB	2	TI=724	LENGTH	RATE
					PATH	7000	1	8		60003			1024	120
32041	TUS	T		Ι	INTER	RUPT	TASK		35	JOB	2	TI=724		
32041	TUS	Т	Х		EXECUT	ING	TASK		7	JOB	2	TI≖707		
														RATE
					PATH	7000	1	24		60095			512	120
32041	TUS	MS			START	28	TASK		7	JOB	2	TI=707	LENGTH	RATE
					PATH	7000	4	1		70001			256	120
32041	TUS	MS			START	29	TASK		7	JOB	2	TI=707	LENGTH	RATE
					PATH	7000	1	2		70004			256	120
32042	TUS	ΜE			END	55	TASK		35	60095 JOB 70001 JOB 70004 JOB	2	TI=724		
32042	TUS	ΜE			END	56	TASK		35	JOB	2	TI=724		
32042	TUS	ΜE			END	57	TASK		35	JOB	2	TI=724		
32043		ΜE			END END END	28	TASK		7	JOB	2	TI=707		
32043	TUS	ΜE			END	29	TASK				2	TI=707		
32043				W	MSG WA	\IT	TASK		7	JOB		TI=707		
32043	TUS	T	Х		EXECUT	ING	TASK		6	JOB JOB		TI=706		
32043	TUS	MS			START	51	TASK		6	JOB	2	TI=706	LENGTH	RATE
					PATH	7000	1	13		60012			48	120
32043	TUS	ΜE			END	51	TASK		6	JOB JOB	2	TI=706		
32043	TUS	MS			START	54	TASK		6			TI=706	LENGTH	RATE
					PATH	7000	1	10		60018			72	120
32043 32043 32043 32043 32043 32043 32043 32043 32043	TUS	ΜE			END	54	TASK		6	JOB JOB	2	TI≃706		
32043	TUS	MS			START	50	TASK		6	JOB	2	TI=706	LENGTH	RATE
					PATH	7000	1	12		60011			52	120
32043	TUS	ME			END	50	TASK		6		2	TI=706		
32043	TUS	MS			START	52	TASK		6	ЈОВ	2			
22212					PATH	7000	T	12	_	60011			4	120
32043	TUS	ME			END	52	TASK		6 6	JOB	2	TI=706		
32043	TUS	MS			START	53	TASK		6	JOB	2	TI=706	LENCTH	
22012	ma				PATH	7000	T	13		60016	_		36	120
32043	TUS	ME				53			_		2	TI=706		
32043	TUS	MS			START	8	TASK		6	JOB	2	TI=706	LENGTH	RATE
220/2	muc				PATH	7000	1	13		60012			2	120
32043	108	ME			END	.8	TASK		6		Z	T10/06	T DATOMIT	D. A. D. D.
32043	102	MS			START	12	TASK	10	6					
32043 32043	THE	M 12			LAIH	7000	J. Traciz	10	,	60009	9	TT-706	12	120
32043	TUD	MC			END START PATH	14	TASK		0	JOB JOB	2	71-706	T TENICIPALI	TO A COST
32043	100	HO			DYLI	7000	THOK	11	O	60010				120
320/3	THE	мг			END	16	T. A.C.D.	11	6	JOB	2	TT~706	10	120
32043	ZUT	MS			START	16	TACK			JOB	2	TI=706	LENGTH	DATE
72075	, 00				PATH			12	J	60011	-	11 700	10	120
32043	TUS	M E			END			12	6		2	TT≃706	10	120
32043					START				6	JOB				RATE
32040							1	13	U	60012				120
32043	TUS	ΜЕ			END				6	JOB	2	TI=706	-	
32043					START				6	JOB				RATE
					PATH			13		60016				120
32043	TUS	МE			END	24	TASK		6	JOB				
32040					START				6	JOB				RATE
							1	11		60014				120
32043	TUS	M E			END		TASX		6	JOB				-
32043							TASK			JOB				RATE
					PATH					60011				120
32043	TUS	ME			END					JOB				
32043	TUS	MS			START				6	JOB				RATE
					PATH					60011			2	120

32043	TUS	M E MS	END	10	TASK		6	JOB	2	TI=706		
32043	TUS	MS ME	START	20	TASK		6	JOB	2	TI=706	LENGTH	RATE
			PATH	7000	1	12		60011			2	120
32043	TUS	M E	END	20	TASK		6	JOB	2	TI=706		
32043	Tijs	MS	START	22	TASK		6	JOB	2	TI=706	LENGTH	RATE
			PATH	7000	1	12		60015			6	120
32043	TUS	M E	END	22	TASK		6	JOB	2	TI=706		
32043	TUS	MS	START	9	TASK		б	JOB	2	TI=706	LENGTH	RATE
			PATH	6001	.2	13	_	70001	_		24	120
32043	TUS	ME	END	- 9	TASK		6	JOB	2	TI=706		
32043	TUS	MS	START	13	TASK	10	6	JOB	2	T1=706	LENGTH	RATE
22212	m110	v =	PATH	5000	M + C17	ĬŪ	_	70001	^	mr 706	32	120
32043	102	ME	END	12	TADK		0	JOB	2	TI=/UU	T DATE	n Amn
32043	IND	ri5	DATE	6001	TASK	11	О	70001	2	T1=/06	PRNGIH	RATE
22042	mite	M E	PAID	15	.U ጥለሮሆ	11	6	70001	2	WT-706	34	120
32043	THE	MC	CMV DA	17	TACK		6	TOB	2	TT=706	עיייטאט ד	מיזיאמ
J204J	TOD	110	PATH	6001	1	12	U	70001	_	17-100	TENGTU	120
32043	THE	M E MS	END	17	TASK	12	6	TOBOT	2	TT=706	30	120
32043	TUS	MS	START	19	TASK.		6	JOB	2	TT=706	T.ENGTH	RATE
2-0-13			PATH	6001	2	13	•	70001	_	11 ,00	14	120
32043	TUS	M E MS	END	19	TASK		6	JOB	2	TI=706		
32043	TUS	MS	START	25	TASK		6	JOB	2	TI=706	LENGTH	RATE
			PATH	6001	6	13		70001			26	120
32043	TUS	M E	END	25	TASK		6	JOB	2	TI=706		
32043	TUS	MS	START	27	TASK		6	JOB	2	TI=706	LENGTH	RATE
			PATH	6001	.4	11		70001			12	120
32043	TUS	ME	END	27	TASK		6	JOB	2	TI=706		
32043	TUS	MS	START	7	TASK		6	JOB	2	TI=706	LENGTH	RATE
		M E MS M E MS M E MS	PATH	6001	.1	12	_	70001			56	120
32043	TUS	ME	END	. 7	TASK		6	JOB	2	TI=706		
32043	TUS	MS	START	11	TASK		6	JOB	2	TI=706	LENGTH	RATE
200/2	mrra	14 H	PATH	900T	1 TASK	12	_	70001		m= 70¢	28	120
32043	TUS	M L MC	END	TI	TASK		0	JOB	2	T1=/06	TEMPORT	n Ame
34043	102	ris .	DIAKI	4001	IASK	10	o	70001	2	11=/00	LENGIH	RAIL
320/3	THE	мъ	LWIU	21	. ተ ተ	12	6	, 70001	2	TT=706	14	120
32043	THE	MS	CTART	23	TASK		6	TOR	2	TT=706	TRNCTH	DATE
32073	100	110	PATH	6001	5	12	Ü	70001	_	11-700	18	120
32043	TUS	M E MS M E MS M E MS M E MS	END	23	TASK		6	JOB	2	TT=706	10	12.0
32044	TUS	MS	START	54	TASK		6	JOB	2	TI=706	LENGTH	RATE
			PATH	7000	1	10	_	60017			72	120
32044	TUS	M E	END	54	TASK	-	6	JOB	2	TI=706	-	
32044	TUS	MS	START	50	TASK		6	JOB	2	TI=706	LENGTH	RATE
				7000	1	11		60010				120
		M E	END	50	TASK		6	JOB	2	TI=706		
32044	TUS	MS	START	52	TASK		6			TI=706	LENGTH	RATE
			PATH	7000	1	11		60010			4	120
32044			END		TASK		6	JOB	2	TI=706		
32044	TUS	MS	START				6	JOB	2	TI=706	LENGTH	
00011				7000		12		60015	_		36	120
32044			END				6	JOB JOB	2	T1=/06	T 73100011	D 4 7777
32044	TUS	mb			TASK	10	6			TT=\09		
32044	mite	M F	PATH	7000	TASK	10	6	60013		ヤエーフロイ	2	120
32044			END START				6	JOB JOB	2	サエーブログ	TENCOL	च अपर
J6U44	TOD	110	PATH			11		60010	4	17-100	LENGIH 12	120
32044	פוויר	м Е	END					JOB	2	TT=706		4£U
32044			START				6	JOB JOB	2	TI=706	LENGTH	RATE
			PATH					60010		,	2	120

32044	TUS	МE		END	10	TASK			JOB				
32044	TUS	MS		START	20	TASK		6	JOB	2	TI=706	LENGTH	RATE
				PATH END	7000	1	11		60010			2	120
32044	TUS	ΜE		END	20	TASK		6	60010 JOB JOB	2	TI=706		
32044	TUS	MS		START	22	TASK							
				PATH	7000	1	11		60014			6	120
32044	TUS	ME		END		TASK		6	60014 JOB	2	TI=706		
32044	TUS	MS		START	50	TASK		6	JOB	2	TI=706	LENGTH	RATE
				PATH		1			60009			52	120
32044 32044	TUS	ΜE		END	50	TASK		6	JOB	2	TI=706		
32044	TUS	MS		END START	52	TASK		6	JOB JOB	2	TI=706	LENGTH	RATE
				PATH	7000	1	10		60009			4	120
32044	TUS	ΑE		END	52	TASK		6	JOB	2	TI=706		
32044	TUS	ls		END START PATH	53	TASK		6	JOB JOB	2	TI=706	LENGTH	RATE
				PATH	7000	1	11		60014			36	120
32044	TUS	ΜF		END	53	TASK		6		2	TI=706		
32044	TUS	MS		START	27			6	JOB	2	TI=706	LENGTH	RATE
				END START PATH	6001	3	10		70001			12	120
32044		ΜЕ		END START PATH	27	TASK		6	JOB	2	TI=706		
32044	TUS	MS		START	7	TASK		6	JOB	2	TI=706	LENGTH	RATE
				PATH	6001	0	11		70001				
32044	TUS	ΜE		END	7	TASK		6	JOB	2	TI=706		
32044				START PATH	11	TASK		6		2	TI=706	LENGTH	RATE
				PATH	6001	0	11		7000I				
32044	TUS	ΜE		END	11	TASK		6	JOB				
32044		MS		START	21	TASK		6	JOB			LENGTH	RATE
				START PATH	6001	0	11		70001				
32044	TUS	ΜE		END	21	TASK		6	JOB	2	TI=706		
32044	TUS	MS		START	23			6	JOB	2	TI=706	LENGTH	RATE
				PATH	6001	4	11		70001			18	120
32044	TUS	ΜE		PATH END START PATH	23	TASK		6		2	TI=706		
32044	TUS	MS		START	53	TASK		6	JOB				RATE
				PATH	7000	1	10		60013			36	120
32044	TUS	МЕ		END	53	TASK		6			TI=706		
		мЕ		END -	58	TASK		7	JOB	2	TI=707		
32045	TUS	T	I	INTERE	RUPT	TASK		6	JOB	2	TI=706		
32045	TUS	T	х	EXECUT	TING	TASK		7	JOB	2	TI=707		
32045	TUS	MS		START	6	TASK		6	JOB	2	TI=706	LENGTH	RATE
			-	PATH	7000	1	10		60009			12	120
32045	TUS	ΜE				TASK		6	JOB	2	TI=706		
32045	TUS	MS		START	28	TASK		7					
	_			FATH START	7000	3	Ì		70001				
32045	TUS	MS		START	29	TASK		7	JOB	2	TI=707	LENGTH	
				PATH	7000)1	2		70003			256	120
32045	TUS	MS		START	10	TASK		6	ЈОВ 60009	2	TI=706	LENGTH	RATE
				PATH	7000)1	10		60009			2	120
32045	TUS	ΜЕ		END	10	TASK		6	JOB	2	TI=706		
32045	TUS	MS		START	20	TASK		6	JOB	2	TI=706	LENGTH	RATE
				PATH	7000	1	10		60009			2	120
32045	TUS	ΜE		END	20	TASK		6	JOB	2	TI=706		
32045	TUS	MS		START	22	TASK		6	JOB	2	TI=706	LENGTH	RATE
				PATH	7000	1	10		60013			6	120
32045	TUS	ΜE		END	22	TASK		6					
32045	TUS	MS		START				6	JOB				
)9	10		70001			56	120
		ΜE				TASK			JOB	2	TI=706		
32045	TUS	MS		START				6					
						9			70001			28	120
32045	TUS	ME		END	11	TASK		6	JOB	2	TI=706		
32045	TUS	MS		START	21	TASK		6	JOB	2	TI=706	LENGTH	RATE

	(0000	10	70001		17 107
000/5 mm/0 N 70	PATH 60009	10 ح	70001	2 TI=706	14 120
32045 TUS M E	END 21 TASK START 23 TASK	6 6		2 TI=706	
32045 TUS MS	START 23 TASK PATH 60013	10	70001	Z 11-700	18 120
32045 TUS M E	END 23 TASK	6	JOB	2 TI=706	10 11
32047 TUS M E	END 28 TASK	7	JOB	2 TI=707	
32047 TUS M E	END 29 TASK	7	JOB	2 TI=707	
32047 TUS MS	START 28 TASK	7	JOB	2 TI=707	LENGTH RATE
J2047 105 115	PATH 70002	1	70001		256 120
32047 TUS MS	START 29 TASK	7	JOB	2 TI=707	
3104, 100 110	PATH 70001	2	70002		256 120
32049 TUS M E	END 28 TASK	7	JOB	2 TI=707	
32049 TUS M E	END 29 TASK	7	JOB	2 TI=707	
32049 TUS T E	END TASK	7	JОВ	2 TI=707	
32049 TUS T X	EXECUTING TASK	6	JOВ	2 TI=706	
32049 TUS T E	end task	6	JOB	2 TI=706	
32049 TUS T X	EXECUTING TASK	9	JOB	2 TI=709	
32052 TUS T E	END TASK	9	JOB	2 TI=709	
32052 TUS T X	EXECUTING TASK	14	JOB	2 TI=714	
32052 TUS T X	EXECUTING TASK	11	JOB	2 TI=711	
32052 TUS T E	END TASK	14	JOB	2 TI=714	
32052 TUS MS	START 32 TASK	11	JОВ	2 TI=711	
	PATH 70001	24	60095		256 120
32054 TUS M E	end 32 Task	11	JOB	2 TI=711	
32054 TUS MS	START 33 TASK	11	JOB	2 TI=711	
	PATH 60095	24	70001	0 my 711	256 120
32054 TUS T W		11	JOB	2 TI=711	
32054 TUS T X	EXECUTING TASK	34	JOB	2 TI=723	
32056 TUS M E	END 33 TASK	11	JOB	2 TI=711 2 TI=723	
	INTERRUPT TASK	34 11	JOB JOB	2 TI=723	
32056 TUS T X 32056 TUS T E	EXECUTING TASK END TASK	11	JOB	2 TI=711	
32056 TUS T E 32056 TUS T X	EXECUTING TASK	34	JOB	2 TI=711	
32056 TUS T E	END TASK	34	JOB	2 TI=723	
32056 TUS T X	EXECUTING TASK	35	JOB	2 TI=724	
32061 TUS T E	END TASK	35	JOB	2 TI=724	
32061 TUS T X	EXECUTING TASK	19	JOB	2 TI=716	
32069 TUS T E	END TASK	19	JOB	2 TI=716	
32069 TUS T X	EXECUTING TASK	12	JOB	2 TI=712	
32069 TUS T E	END TASK	12	JOB	2 TI=712	
32069 TUS T X	EXECUTING TASK	24	JOB	2 TI=721	
32069 TUS T E	END TASK	24	JOB	2 TI=721	
32075 TUS T X	EXECUTING TASK	14	JOB	2 TI=714	
32075 TUS T E	END TASK	14	JOB	2 TI=714	
32075 TUS T X	EXECUTING TASK	34	JOB	2 TI=723	
32075 TUS MS	START 59 TASK	34	JOB	2 TI=723	
	PATH 60027	0	70001		10
32078 TUS T W	MSG WAIT TASK	34	JOB	2 TI=723	
32078 TUS T X	EXECUTING TASK	20	JOB	2 TI=717	
32079 TUS T E	END TASK	20	JOB JOB	2 TI=717	
32081 TUS T X	EXECUTING TASK	7	JOB JOB	2 TI=707	T TOTAL CONT. TO A DO.
32081 TUS MS	START 58 TASK	7	JOB	2 TI=707	
22021 mye Ne	PATH 70001	24	60095 ЈОВ	2 TI=707	
32081 TUS MS	START 28 TASK	7 1	70001	2 II=101	256 12
32081 TUS MS	PATH 70004 START 29 TASK	7	JOB	2 TI=707	= :
2500T 109 M2	PATH 70001	2 ′	70004	~ II-/0/	256 12
32083 TUS M E	END 28 TASK	7	JOB	2 TI=707	IL
32083 TUS M E	END 29 TASK	7	JOB	2 TI=707	
32083 TUS T W	MSG WAIT TASK	7	JOB	2 TI=707	
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32083 TUS MS 32083 TUS MS 32083 TUS M E 32083 TUS MS 32083 TUS M E 32083 TUS MS 32083 TUS M E						
32083 TUS T X	EXECUTING TASK	6	JOB	2 TI=706		
32083 TUS MS	START 51 TASK	6	JOB	2 TI=706	LENGTH	RATE
	PATH 70001	1.3	60012		48	120
32083 TUS M E	END 51 TASK	6	JOB	2 TI=706	~ midmi	70 A MET
32083 TUS MS	START 54 TASK	10 0	10B	2 T1=706	LENGTH	RATE
20002 000 14 5	PATH /UUUI	10	COOTS	2 TT-706	72	120
32083 TUS M E	END 34 TASK	6	מטד	2 TI-700	TRNCTH	DATE
32003 TUS MS	PATH 70001	12	60011	2 11-700	52	120
32083 THS M E	RND 50 TASK	6	JOB	2 TI=706		
32083 TUS MS	START 52 TASK	6	JOB	2 TI=706	LENGTH	RATE
	PATH 70061	12	60011		4	120
32083 TUS M E	END 52 TASK	6	JOB	2 TI=706		
32083 TUS MS	START 53 TASK	6	JOB	2 TI=706	LENGTH	RATE
	PATH 70001	13	60016		36	120
32083 TUS M E	end 53 task	6	JOB	2 TI=706		- 100
32083 TUS MS	START 8 TASK	- 6	JOB	2 T1=706	LENGTH	RATE
	PATH /0001	13	60012	0 MT706	2	120
32083 TUS M E	END 8 TASK	6	JUB TOB	2 11=700 2 TT-706	។ ខស្នេចមួយ	ਜਾਮਰ
32083 TUS MS	START 12 TASK	tn c	ANNA ANNA	2 11-700	LENGIA 12	120
22002 THE M T	PND 12 TACK	10	EOOOO ROT.	2 TI=706	14	14.0
32083 THS MS	START 14 TASK	6	JOB	2 TI=706	LENGTH	RATE
32003 100 110	PATH 70001	11	60010		10	120
32083 TUS M: E	END 14 TASK	- 6	JOB	2 TI=706		
32083 TUS MS	START 16 TASK	e	ЈО В	2 TI=706	LENGTH	RATE
	PATH 70001	12	60011		10	120
32083 TUS M E	END 16 TASK	6	JOB	2 TI=706		
32083 TUS MS	START 18 TASK	6	JOB	2 TI=706	LENGTH	RATE
	PATH 70001	13	60012		2	120
32083 TUS M E	END 18 TASK		3 JUB	2 TI=700	ייייטארידע ד	ው አጥሮ
32083 TUS MS	START 24 TASK	12) JUB 60016	2 112/00	LENGIA .	120
22082 THE M P	EMID 3% TACK	13	TOR	, 2 TT=706		120
32005 105 M E	START 26 TASK	6	JOB	2 TI=706	LENGTH	RATE
32003 100 110	PATH 70001	11	60014		2	120
32083 TUS M E	END 26 TASK	e	JOB	2 TI=706	•	
32083 TUS MS	START 6 TASK	€	5 JOB	2 TI=706	LENGTH	RATE
•	PATH 70001	12	60011		12	120
32083 TUS M E	end 6 task	6	JOB	2 TI=706		
32083 TUS MS	START 10 TASK		5 ЈОВ	2 TI=706	LENGTH	RATE
	PATH 70001	12	60011	0 mt. 70 <i>6</i>	. 2	120
32083 TUS M E	END 10 TASK	t	JOB JOB	2 TL=706	ן דורייטוגיד ד	TO A PPET
32083 TUS MS	START 20 TASK PATH 70001	12	600I1	2 11-700	2 LENGIN	120
32083 TUS M E	END 20 TASK	14	S IOR	2 ጥኘ=7በ6		120
32083 TUS MS	END 20 TASK START 22 TASK	ŕ	JOB JOB	2 TI=706	LENGTH	RATE
52005 100 115	PATH 70001	12	60015	5	6	120
32083 TUS M E	END 22 TASK	6			;	
32083 TUS MS	START 9 TASK	(5 JOB 5 JOB	2 TI=706	LENGTH	RATE
	PATH 60012	13	70001	L	24	120
32083 TUS M E	END 9 TASK		5 JOB	2 TI=706	•	
32083 TUS MS	START 13 TASK		9 108	2 TT=\Ot	LENGTH	
	PATH 60009	10	70001		. 32	120
32083 TUS M E	END 13 TASK		5 JOB	2 TI=706) ביוייייינוקניני	D AጥD
32083 TUS MS	START 15 TASK		6 JOB 70001	2 TI=706		120
32083 TUS M E	PATH 60010 END 15 TASK	11	TOUU1 AOIL A	2 TI=706	5	140
		· ·	яот. Яот. А	2 TI=700	LENGTH	RATE
TOU IN	PATH 60011	12	70001		30	120
		_				

	Ä				
32083 TUS M E	END 17 TASK	6	JOB 2	TI=706	
32083 TUS MS	START 19 TASK	6	JOB 2	TI=706 LENGTH	RATE
	PATH 60012	1.3	70001	14	120
32083 TUE M E	PATH 60012 END 19 TASK START 25 TASK	6	JOB 2	TI=706	
32083 TUS MS	START 25 TASK	6	JOB 2	TI=706 LENGTH	RATE
	PATH 60016	13	70001	26	120
20000 mmo 14 H	79175 ÖF 013.077	6	JOB 2	! TI=706	- · · ·
32083 TUS MS	START 27 TASK		JOB 2	TI=706 LENGTH	RATE
52005 100 1-0	PATH 60014	11	70001	10	120
32083 TUS M E	END 27 TASK	6	JOB 2	T =706	
32083 TUS MS	START 7 TASK	6	JOB 2	7.1=706 LENGTH	RATE
32003 100 MD	START 27 TASK PATH 60014 END 27 TASK START 7 TASK PATH 60011 END 7 TASK START 11 TASK	12	70001	56	120
32083 TUS M E	END 7 TASK	6	ЈОВ 2	TT=706	
32083 TUS MS	START 11 TASK	. 6	JOB 2	TI=706 LENGTH	אייו ע
J200J 105 H5	PATH 60011	12		28	120
32083 TUS M E		ь 6	TOP 2	! TI=706	120
		6	JOB 2	TI=706 LENGTH	RATE
32083 TUS MS	PATH 60011	12	70001		
22002 mile v m	END 21 TASK		JOB 2	14 1 mx=204	120
32083 TUB M E	ENU 21 IABA	6 6	10D 2	TI=706 LENGTH	To A EDITO
32083 TUS M E 32083 TUS MS	START 23 TASK				
		12	70001		120
32083 TUS M E	END 23 TASK	6		! TI=7.06	
32085 TUS M E	END 59 TASK END 58 TASK	34		TI=723	
		7		? TI=707	
	INTERRUPT TASK	_		TI=706	
32085 TUS T X	EXECUTING TASK	7		! TI=707	
32085 TUS MS	START 28 TASK	. 7		TI=707 LENGTH	
	PATH 70003	1 _		-	120
32085 TUS MS	START 29 TASK	7		TI=707 LENGTH	
	PATH 70001 END 28 TASK	2		256	120
32087 TUS M E	end 28 task	7			
32087 TUS M E	THU TO THUM	•		? TI=707	
32087 TUS MS	START 28 TASK	7		T1=707 LENGTH	
	PATH 70002	1	70001		120
32087 TUS MS	START 29 TASK	7		TI=707 LENGTH	
	PATH 70001	2		256	120
32089 TUS M E	END 28 TASK	7			
32089 TUS M E	END 29 TASK	7		? TI=707	
32089 TUS .T E	end task	7		! TI=707	
32089 TUS T X	EXECUTING TASK	6		? TI=706	
32091 TUS MS	START 54 TASK	6	JOB 2	TI=706 LENGTH	
	PATH 70001	10	60017		120
32091 TUS M E	END 54 TASK	6			
32091 TUS MS	START 50 TASK PATH 70001	6	JOB 2	TI=706 LENGTH	RATE
•	PATH 70001	1.1	60010	52	120
32091 TUS M E 32091 TUS MS	end 50 tásk	6	JOB 2	? TI=706 ? TI=706 LENGTH	
32091 TUS MS	START 52 TASK	6	JOB 2	TI=706 LENGTH	RATE
	PATH 70001	11	60010	4	120
32091 TUS M E	PATH 70001 END 52 TASK START 53 TASK	6	JOB 2	? TI=706	
32091 TUS MS	START 53 YASK	6	JOB 2	TI=706 LENGTH	RATE
	PATH 70001	12	60015	36	120
32091 TUS M E	END 53 TASK	6	JOB 2	! TI=706	
32091 TUS MS	START 26 TASK	6	JOB 2	TI=706 LENGTH	RATE
	PATH 70001	10	60013	2	120
32091 TUS M E	END 26 TASK	6	ЈОВ 2	2 TI=706	
32091 TUS MS	START 6 TASK	. 6	ЈОВ 2	TI=706 LENGTH	RATE
	PATH 70001	11	60010	12	120
32091 TUS M E	END 6 TASK	6	JOB 2	TI=706	
32091 TUS MS 32091 TUS M E	START 10 TASK	6	JOB 2	TI=706 LENGTH	RATE
		_		· · _	
	PATH 70001	11	60010	2	120

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32091	TUS	м Е	END	10	TASK		6	JOR JOB 60010 JOB JOB 60014 JOB JOB	2	TI=706		
32091	TUS	MS	START	20	TASK		6	JOB	2	TI=706	LENGTH	RATE
			PATH	7000	1	11		60010	í		2	120
32091	TUS	мЕ	END	20	TASK		6	JOB	2	TI=706		
32091	TUS	MS	START	22	TASK		6	JOB	2	TI=706	LENGTH	RATE
			PATH	7000	1	1.3.		60014			6	120
32091	TUS	M E	END	22	task		6	JOB	2	TI=706		
32091	TUS	MS	START	50	TASK		6	JOB	2	TI=706	LENGTH	RATE
			PATH	7000	1	10	_	60009	_		52	120
32091	TUS	ΜE	END	50	TASK		6	JOB	2	TI=706		
32091	TUS	MS	START	52	TASK		6	JOB	2	TI=706	LENGTH	RATE
			PATH	7000	1	TÜ	_	60009	_	mT 704	4	120
32091	TUS	ME	END	52	TASK		6	JUB	2	T1=/05	7 1237/1911	T2 & £017
32091	TUS	MS	DATE	2000	TASK	11	0	4001Y	Z	TT=100	PENCIH	120
22001	mile	мг	PATH	/000	T	TT	c	TOP	7	ポエーフハム	20	120
22001	109	MC	EMD CTADT	23 27	TASK		6	TOB	2	TI-700	TEMOTH	DATE
25031	TOĐ	tio	DVAD	6001	JENOT	10	u	70001	_	TT-100	12	120
32091	THE	мъ	END	97	TASK	10	6	.TOR	2	TT=706	*	120
32091	THS	MS	START	7	TASK		6	JOB	2	TT=706	LENGTH	RATE
5-071			PATH	6001	0	1.1	•	70001	Ī		56	120
32091	TUS	ME	END	7	TASK		6	JOB	2	TI=706		
32091	TUS	MS	START	11	TASK		6	JOB	2	TI=706	LENGTH	RATE
			PATH	6001	.0	11		70001			28	120
32091	TUS	ME	END	11	TASK		6	JOB	2	TI=706		
32091	TUS	MS	START	21	TASK		6	JOB	2	TI=706	LENGTH	RATE
			PATH	6001	.0	11		70001			14	120
32091	TUS	M E	END	21	TASK		6	JOB	2	TI=706		
32091	TUS	MS	START	23	TASK		5	JOB	2	TI=706	LENGTH	RATE
00001	*****		PATH	6001	4	11	_	70001			18	120
32091	TUS	ME	END	23	TASK		6	JOB	2	T1=/06	TOMORIT	D 40072
32091	TUS	MS	START	7000	TASK	10	6	JOB	4	TT=\00	PENGIH	KATE
22001	TITE	ме	PAIR	7000	መለፍጥ T	TÜ	ے	1UB 0U013	2	TT-706	30	120
32091	The	MC	עם א סיד. ער אינים	.6	TADA		6	TOR	2	TI=700	LENCTH	PATE
32032	100	LTD .	DATH	7000	IRGK	10	v	60009	-	11-700	12	120
32092	THE	мк	END	7000 6	TASK	10	6	JOR	2	TT=706		120
32092	THS	MS	START	10	TASK		6	JOB	2	TI=706	LENGTH	RATE
5-07.			PATH	7000	1	10	•	60009			2	120
32092	TUS	ME	END	10	TASK		6	JOB	2	TI=706		
32092	TUS	MS	START	20	TASK		6	JOB	2	TI=706	LENCTH	RATE
			PATH	7000	1	10		60009			2	120
32092	TUS	ME	END	20	TASK		6	JOB	2	TI=706		
32092	TUS	MS	START	22	TASK		6	JOB	2	TI=706	LENGTH	RATE
						10		60013	_		6	120
		ME	END		TASK		6			TI=706		
32092	TUS	MS			TASK		6	JOB		TI=706	LENGTH	
20000			PATH			10		70001		mT_706	56	120
32092			END		TASK		6			TI=706		ከ ለጥ ሮ
32092	TUS	ms .			TASK 19	10	6	JOB 70001			LENGTH 28	RATE 120
32092	THE	M Tr	END		TASK	10	6			TI=706		120
32092			START				6	JOB			LENGTH	RATE
52052	100	-413	PATH			10	J	70001			14	120
32092	THS	ме	END		TASK		б	JOB	2	TI=706		
		MS	START				6	JOB.	2	TI=706	LENGTH	RATE
					13	10	-	70001			18	120
		ME	END				6			TI=706		-
32092	TUS	T E	END		TASK		6			TI=706		•
32092	TUS	тх	EXECU	TING	TASK		9	JOB	2	TI=709		

•													
32095	TUS	T	E		END -	TASK		9	JOB ·	2	TI=709		
32095	TUS	T	X		EXECUTING	TASK		10	JOB	2	TI=710		
32101	TUS	${f T}$		Ι	INTERKUPT	TASK		10	JOB	2	TI=710		
32101		_	X		EXECUTING	TASK		11	JOB		TI=711		
32102	TUS	MS			START 32	TASK		11	JOB	2		LENGTH	RATE
					PATH 7000		24		60095			256	120
32104					END 32	TASK		1.1	JOB		TI=711		
32104	TUS	MS			START 33	TASK		11	JOB	2		LENGTH	
_					PATH 6009	_	24		70001	_		256	120
32104		_		W		TASK		11	JOB		TI=711		
32104			Х		EXECUTING	TASK		10	JOB		TI=710	•	
32106				_	END 33	TASK		11	JOB		TI=711		
32106		T		Ŧ	INTERRUPT	TASK		10	JOB		TI=710		
32106			X		EXECUTING	TASK		11	JOB		TI=711		
32106			.E		END	TASK		11	JOB		TI=711		
32106			X_		EXECUTING			10	JOB JOB		TI=710		
32109		T	E		END	TASK		10	JOB TOB		TI=710 TI=723		
32109 32109		T	X		EXECUTING	TASK		34 34	JOB JOB		TI=723		
32109			E X		END EXECUTING	TASK TASK		35	JOB		TI=724		
			Y.		START 55	TASK		35	JOB			LENGTH	RATE
32109	TOS	PIS			PATH 7000		6	33	60001	4	11-124	1024	120
32109	שווייי	мe			START 56	TASK	u	35	JOB	9	TT=724	LENGTH	RATE
32109	Tub	113			PATH 7000		7	,,	60002	_	11-124	1024	120
32109	THS	MS			START 57	TASK	•	35	JOB	2	TI=724		RATE
3210,	100	110			PATH 7000		8	33	60003	_	11 / 11	1024	120
32117	TUS	МE			END 55	TASK	_	35	JOB	2	TI=724		
32117					END 56	TASK		35	JOB	2	TI=724		
32117	TUS	MЕ			END 57	TASK		35	JOB	2	TI=724		
32121	TUS	T		I	INTERRUPT	TASK		35	JOB	2	TI=724		
32121	TUS	T	X		EXECUTING	TASK		7	JOB -	2	TI=707		
32121	TUS	MS			START 58	TASK		7	JOB	2	TI=707	LENGTH	RATE
					PATH 7000	1	24		60095			512	120
32121	TUS	MS			START 28	TASK		7	JOB	2	TI=707		RATE
				•	PATH 7000		1		70001			256	120
32121	TUS	MS			START 29	TASK	_	7		2	TI=707	LENGTH	RATE
20100					PATH 7000		2	_	70004		m= 507	256	120
32123					END 28	TASK		7	JUB		TI=707		
32123			٠,		END 29	TASK		7	JOB		TI=707		
32123		T		W	MSG WAIT EXECUTING	TASK TASK		7	JOB JOB		TI=707		
32123		т ме	Ψ		START 51	TASK		6 6	JOB			LENGTH	RATE
22123	103	143			PATH 7000		13	u	60012	2	11-700	48	120
32123	THS	ΜE			END 51		٠,٠	6		2	TT=706	40	120
		MS			START 54			6				LENGTH	RATE
5-4-5	, ,,,,,	110			PATH 7000		10	·	60018				120
32123	TUS	M E			END 54			6		2	TI=706		
32123					START 50			6	JOB	2	TI=706	LENGTH	RATE
	•••-				PATH 7000		12	_	60011				120
32123	TUS	ME				TASK		6	JOB	2	TI=706		
32123	TUS	MS			START 52	TASK		6	JOB	2	TI=706	LENGTH	RATE
					PATH 7000	1	12		60011				1.20
32123					end 52	TASK		ti	JOB	2	TI=706		
32123	TUS	MS	٠.		START 53	TASK		ℓ_{ℓ}	JOB				RATE
						1	13		60016				120
32123					END 53			6					
32123	TUS	MS				TASK		6	JOB				RATE
	rnes.	., -				1	13		60012	_	m= 50°	. 2	120
32123					END 8			6					13 4 1117
32123	THE STATE	MS			START 12	TASK		6	JOB	- 2	TI=/U6	LENGTH	RATE
	TOD				PATH 7000	17	10		60009			12	120

	•						
32123 TUS M E	END 12 TASK	. (6	JOB	2	TI=706	
32123 TUS MS	START 14 TASK	111	6	JOB	2	TI=706 LENGTH	I RATE
20102 THE M R	FAIR /UUUL	. II	6	TOE	2	TT=706	120
32123 TUS MS	START 16 TASK	i	6	JOB	2	TI=706 LENGTH	I RATE
	PATH 70001	12		60011) () I(120
32123 TUS M E	END 16 TASK		6	JOB	2	TI=706	1 5 1.00
32123 TUS MS	START 18 TASK PATH 70001	13	b	90012 308	2	TI=/UG LENGIA	1 KATE 120
32123 TUS M E	END 18 TASK	. (6	JOB	2	TI=706	
32123 TUS MS	START 24 TASK	1 (6	JOB	2	TI=706 LENGTH	I RATE
00100	PATH 70001	13 ;	_	60016			5 120
32123 TUS M E	END 24 TASK	- J	ь К	TOR	2	TI=/U6 TI=706 TRNGTH	TATE
DE LOI CAIAC	PATH 70001	11	Ų	60014	7	22-700 1120011	120
32123 TUS M E	END 26 TASK		6	JOB	2	TI=706	
32123 TUS MS	START 6 TASK	10	6	JOB	2	TI=706 LENGTH	I RATE
20102 Tile M F	PATH 70001	. 12	è.	10B 900TT	2	12 πτ⇔706	120
32123 TUS MS	START 10 TASK		6	JOB	2	TI=706 LENGTH	RATE
	PATH 70001	12		60011			120
32123 TUS M E	END 10 TASK	. (6	JOB	2	TI=706	<u></u>
32123 TUS MS	START 20 TASK	10	6	JOB	2	TI=706 LENGTH	I RATE
32123 TUS M E	FND 20 TASK	12	6	JOB	ź	TT=706	1 LZU
32123 TUS MS	START 22 TASK	i	б	JOB	2	TI=706 LENGTH	I RATE
	PATH 70001	12		60015		* {	120
32123 TUS M E	END 22 TASK		6	JOB	2	TI=706	TD Arrose
32123 TUS MS	PATH 60012	13	0	70001	Z	11=700 LENGII	1 KATE
32123 TUS M E	END 9 TASK	-1	6	JOB	2	TI=706	
32123 TUS MS	START 13 TASK	1	6	JOB	2	TI=706 LENGTH	I RATE
22122 muc M m	PATH 60009	10	۷.	70001	2	706 32	2 120
32123 TUS MS	START 15 TASK		6	JOB	2	TI=706 LENGTH	I RATE
	PATH 60010	11	-	70001		34	120
32123 TUS M E	END 15 TASK	1	6	JOB	2	TI=706	
32123 TYS MS	START 17 TASK	. 19	6	JOB :	2	TI=/U6 LENGTH	1 RATE.
32123 TUS M E	END 17 TASK	14	6	JOB	2	TI=706	,120
32123 TUS MS	START 19 TASK		6	JOB	2	TI=706 LENGT	I RATE
00100 mus at m	PATH 60012	13		70001		TT-706	120
32123 TUS M E 32123 TUS MS	END 19 TASK START 25 TASK		6	TOR	2	TI=706 TI=706 LENGTI	I RATE
JE123 105 H5	PATH 60016	13	٠	70001	_	26	120
32123 TUS M E	END 25 TASK		6	JOB	2	TI=706	
32123 TUS M E 32123 TUS MS	START 27 TASK	11	6	JOB	2	TI=706 LENCTI	I RATE
39193 TUS M R	FAIH GUUL4	TT	6	TOR	2	TT=706	2 120
32123 TUS MS	START 7 TASK		6	JOB	2	TI=706 LENGTI	I RATE
32123 TUS M E 32123 TUS MS	PATH 60011	12		70001		50	5 120
32123 TUS M E	END 7 TASK		6	JOB	2	TI=706	T Dimm
32123 TUS MS	START II TASK	12	b	70001	Z	11=706 LENGII	R 120
32123 TUS M E	END 11 TASK	44	6	JOB	2	TI=706	5 120
32123 TUS M E 32123 TUS MS 32123 TUS M E 32123 TUS MS	START 21 TASK	×. :	6	JOB	2	TI=706 LENGT	H RATE
00100 mmc 14 m	PATH 60011	12	,	70001	•	I.	4 120
52125 TUS M E	END 21 TASK START 23 TASK PATH 60015		6	TOR	2	- £1=706 - TT=706 · LENCT!	H RATE
2-123 100 Mg	PATH 60015	12	U	70001	-		B 120

32123	TUS	мЕ			END	23	TASK		6	JOB	2	TI=706		
32125	THE	ME			RND	58	TASK		7	TOR	2	TT=707		
22122	100	## 14		т	THEFT	שמוזי	m A CIE		é	TOD	-	TT-707		
32125	TUS	T		T	INTERF	CUPT	TASK		b	JOR	2	T1=/00		
32125	TUS	T	Х		EXECUT	LING	TASK		7	JUB	2	TI=707		
32125	TUS	MS			START	28	TASK		7	JOB	2	TI=707	LENGTH	RATE
					PATH	7000	3	1		70001		<i>ti</i> -	256	120
32125	THS	MS			START	29	TASK		7	JOB	2	TT=707	T.ENGTH	RATE
JA					DATH	7000	1	. 2	•	70003	_		256	120
20107	marto	3.F 13			LUIT	7000	THA CITE	-	-	70007	1	mr_707	2.10	1,20
34147	TUS	n e			END	20	TASK		-	JUB	_	T1=/U/		
32127	TUS	ME	٠.		END	29	TASK		7	JOB	Z	T1=/07		
32127	TUS	MS			START	28	TASK		7	JOB	2	TI=707	LENGTH	RATE
					PATH	7000	2	$\cdot 1$		70001		7 - 1	. 256	120
32127	THS	MS			START	29	TASK		7	JOB	2	TI=707	T.ENGTH	LATE
					PATH	7000	1	2		70002	_		256	120
22120	THIC	M 12			EMI	7000	. ምል ወም ·	_	7	70002	2	mT707	2,0	120
34147	TOO	M 15			מאת	20	THOL			JOD	2	11-707	•	
32129	1,05	M E			END	29	TASK		4.	JOR	4	TT=/6/		
32129	TUS	T	Е		END		TASK		7	JOB	2	TI=1707		
32129	TUS	T	X		EXECUT	ING	TASK	,	6	JOB	2	TI=706		11 J. 18
32129	TUS	MS			START	54	TASK		6	JOB	2	TI=706	LENGTH	RATE
					PATH	7000	1	410		60017			72	120
32126	TITE	м₽			EMT	5/	ጥለሮህ		6	TOR	2	TT-706	,	
20110	TUS	24 E			COLVIDA	74	m k čir		6	JOD	2	MT-700	T EMORIT	73.4 (1072)
34149	TUS	MS			START	50	THOK		О	305	_	17=100	LENGIH	KALL
					PATH	7000	7	7.7		60010			52	120
32129	TUS	ΜЕ			END	50	TASK		6	JOB	2	TI=706		
32129	TUS	MS			START	52	TASK		6	JOB	2	TI=706	LENGTH	RATE
					PATH	7000	1	11		60010			4	120
32129	TUS	ME			END	52	TASK		6	JOB	2	TT=706		
32120	TITE	MC			STADT	53	TASK		ž	TOB	2	TT-706	TEMOTU	D ለጥሮ .
JEILS	103	110	. 5		DAME	7000	THUK	10	U	5001E	_	11-100	LENGIA	VUTT
					PAIH	7000	T.	12	_	00013	_		20	TZÜ
32129	TUS	ME			END	53	TASK		6	JOR	2	1.T=\00		
32129	TŲS	MS			START	26	TASK		્6	JOB	2	TI=706	LENGTH	RATE
					PATH	7000	1	10		60013		17.1	2	120
32129	TUS	ΜE			END	26	TASK		6	JOB	2	TI=706		
32129	TUS	MS			START	6	TASK		6	JOB	2	TI=706	LENGTH	RATE
					PATH	7000	1	11	_	60010			12	120
22120	TITE	M 18			DATE	7000	+ - πλΩν		-6	JOB	٠,	mr-704	14	120
36762	TUD	3403			COLUMN TOTAL	. u	THOK	·	0	JOB	-	11-700	T THEOMY	n. 4 mm .
34149	1.02	rio			START	10	TASK		О	JUB	4	11=/06	LENGIH	RATE
					PATH	7000	1	ΤŢ		60010			2	120
32129	TUS	ΜE			END	10	TASK		6	JOB	2	TI=706		
32129	TUS	MS		•	START	20	TASK		6	JOB	2	TI=706	LENGTH	RATE
					PATH	7000	1	11		60010		+ 77	2	120
32129	TUS	ΜE			END	20	TASK		6	JOB	2	TI=706		
32120	THE	MS			START	22	TASK		6	TOR	2	TT=706	TENCTH	ያ ልጥዩ
J. 12.	TOO	110			DAME	מממל	1	.11	v	60014	-	17-100	Thursti	120
20120		37 79			ENTU	7000	A CONT		_	00014		mm . 35.c	0	120
32129	TUS	N E			END	22	TASK	• •	6	JOB	Z	T1=/06		
32129	TUS	MS			START	50	TASK		6	JOB 60009 JOB	2	TI=706	LENGTH	
					PATH	ሷስብ0	1	10		60009	ż		52	120
32129	TUS	ΜE			END	ن	TASK		6	JOB	2	TI=706		10 miles 1
32129	THS	MS			START	52	TASK		6	60009	2	TT=706	LENGTH	RATE
			٠.		PATH	7000	1	10	•	60009	_		4	120
22120	TITE	мπ			EMD	52	mAev	-0	· · c	JOB	2	T-704	*1	120
34147	100	II E			EMD	J2	TASK	1. 4	Ģ	300	_	11-100	T The Paleton	er Leite
32129	TUS	Mb			END START	23	TASK		b	JOB	Z	TT=100	LENGTH	RATE
					PATH	7000	I	11		60014			36	120
32129	TUS	ΜE			END	53	TASK		-6	JOB	2	TI=706		5 5 5
32129	TUS	MS			START	27	TASK		6	JOB	2	TI=706	LENGTH	RATE
					PATH	6001	3	10		70001			12	120
32129	THS	МЕ			END	27	TASK	·	6	JOB	2	TT=706		
32120	TILE	MS			STADO	~,	TACE		ĕ	70001 JOB JOB	2	T=706	TENCTU	PÁTE
24763	TOO	444			DYMIA	600*	TOOK	1 1	J	70001	4	* T-100	56	
					PATH	OUUT	U ,	11		70001		•	J b	120

32129	TUS	MEMS MEMS MEMS MEMS MEMS MEMS MEMS MEMS	END 7	TASK		6	JOB	2	TI=706		
32129	TUS	MS	START 11	TASK		6	JOB	2	TI=706	LENGTH	RATE
00100		7/ 77	PATH 600	(O	11	,	70001	_	mT. Jod	28	120
32129	TUS	M E	END II	TASK		6	TOR	2	TT=706	T TOMOUTH	ייי א מיי
34149	105	Ma	DATH 600	INDA	11	Ų	70001	Z	17-100	LENGIH	120
32129	THS	M E	END 21	TASK		6	JOB	2	TT=706	7-7	120
32129	TUS	MS	START 23	TASK		6	JOB	2	TI=706	LENGTH	RATE
			PATH 600.	14	11	_	70001	_	, · · ·	18	120
32129	TUS	M E	END 23	TASK		6	JOB .	2	TI=706		
32129	TUS	MS	START 53	TASK		6	JOB	2	TI=706	LENGTH	RATE
			PATH 7000)I	10	_	60013			36	120
32129	TUS	ME	END 53	TASK		6	JOB	2	TI=706		1
32130	TUS	MS	START 6	TASK	10	6	70R	2	T1=/06	LENGTH	RATE
SOTON	mne	M D	PATH /UUL	MV GAL	TO	æ	60009	2	TT-706	12	120
32130	TUD	M B	ס עווים 10	TASK		6	JOB	2	TT=706	TENCTU	שייף∧כו
32130	100	MO	PATH 700	11	10	U	60009	_	17-100	DENGIH.	120
32130	TUS	мЕ	END 10	TASK	10	6	JOB	2	TI=706	-	,220
32130	TUS	MS	START 20	TASK		6	JOB	2	TI=706	LENGTH	RATE
•			PATH 7000	10	10		60009			2	120
32130	TUS	M E	END 20	TASK		6	JOB	2	TI=706		·
32130	TUS	MS	START 22	TASK		6	JOB	2	TI=706	LENGTH	RATE
			PATH 7000)1	10		60013	_		6	120
32130	TUS	ME	END 22	TASK		6	JOB	2.	TI=706	* ****	
32130	TUS	MS	START /	TASK	10	ь	30001	Z	TT=/06	LENGTH	RATE
32130	THE	ME	FAIR GOOD	ንጛ ጥልፍዩ	10	6	JOR JOOR	2	TT=706	90	120
32130	TUS	MS	START 11	TASK		6	JOB	2	TI=706	LENGTH	RATE
		 -	PATH 600	09	10	•	70001			28	120
32130	TUS	ME	END 11	TASK		6	JOB	2	TI=706		
32130	TUS	MS	START 21	TASK		6	JOB	2	TI=706	LENGTH	RATE
			PATH 6000	09	10	_	70001			14	120
32130	TUS	ME	END 21	TASK		6	JOB	2	TI=706		
32130	TUS	MS	START 23	TASK	10	0	JOR	2	TT=100	LENGTH	RATE
32130	TITE	M · T	FAIR OUU	TO TO	TO	6	TOB	2	TT==706	10	120
32130	THS	TE	END 23	TASK		6	JOB	2	TT=706		
32130	TUS	TX.	EXECUTING	TASK		9	JOB	2	TI=709		
32133	TUS	TE	END	TASK		9	JOB	2	TI=709		
32133	TUS	тх	EXECUTING	TASK		13	JOB	2	TI=713		
32133	TUS	ΤX	EXECUTING	TASK		14	JOB	2	TI=714		
32133	TUS	T E	END	TASK		13	JOB	2	TI=713		
32133	TUS	T E T X	END	TASK		14	JOB	2	TI=714		
32133	TUS	TX	EXECUTING	TASK		34	TOR	2	T1=/23		
32135 32135			END EXECUTING					_	TI=723 TI=724		
32135			END	TASK		35	JOB JOB		TI=724	•	
32151	TUS	T X	EXECUTING	TASK		11	JOB .	2	TI=711		
32152	TUS	MS	EXECUTING START 32 PATH 700	TASK		11	JOB	2	TI=711	LENGTH	RATE
	77/7		PATH 700	01	. 24		60095			256	120
		ME	END 32	TASK		11	JOB	2	TI=711	12.2	
32154	TUS	MS	START 33	TASK	٠.	11	JOB	2	TI=711	LENGTH	RATE
00151	m		PATH 600	95	24		70001			256	120
32154	TUS	T W	MAG WATT	TASK		11 11	JOB	2	TI=711 TI=711		
32120	TUD	ጥሃ	EXECULTRIC	TAGE		17	AOT.	5	TI=711		
32156	THE	ME TX TE	END	TASK	•	11	JOB	2	TI=711		
32160	TUS	ΤX	EXECUTING	TASK		14	JOB	2			٠. ٠
32160	TUS	T E	END	TASK			JOB		TI=714		

32160 TUS			700	0 MT 700	
32160 TUS T X	EXECUTING TASK	. 34	JUB	2 T1=/23	I INCOME DAME
32160 TUS MS	START D9 TASK	24	10B	Z 11=/23	LENGTH RATE
001/1 mm8 B T	PATH 60027	U 7,	70001	0 MT_700	10 1
32101 TUS 1 1	INTERRUPT TACK	34 7	10B	7 TT-/73	
32161 TUS T X	CMARK ED WARK	7	JOB	2 11-707	TEMORIE DAME
32101 TUS MS	DAMIT GO THEIR	24	10D	2 11=/0/	LENGIH KATE
20161 mue we	CONTRACTOR OF THE PROPERTY OF	24	כפטטס	2 TT-707	DAG UMONGT
32101 105 MS	DINKI ZO INDK	1 ′	40001	2 11-707	DENGIR RAID
22161 mile Me	CAVE LOOG	7	TOR	2 TT707	230 12U 270 120012 1
32101 103 M3	DATE ZO INDE	ຳ '	7000%	2 11-707	DENOIR RAID
22162 THE M E	THIN 28 TACK		70004 TAR	9 TT=707	230 120
22103 100 M E	PMD 20 TASK	7	אַטני	2 TI-707	
32163 TUS T W	MSC WATT TASK	7	TOR	2 TT=707	
32163 TUS T W 32163 TUS MS 32163 TUS MS 32163 TUS M E 32163 TUS MS 32163 TUS M E	EXECUTING TASK	6	TOR	2 TI=706	
32103 105 1 A	START 51 TASK	6	TOR	2 TI=700	LENGTH RATE
32103 100 110	PATH 70001	13	60012	2 11 700	/B 120
32163 THS M E	END 51 TASK	-5	TOR	2 TT=706	40 120
32163 TUS MS	START 54 TASK	6	JOB	2 TT=706	LENGTH BATE
32103 100 110	PATH 70001	10	60018	2 11-100	72 120
32163 THS M E	END 54 TASK	5	TOB	2 TT=706	72 120
32163 TUS MS	START 50 TASK	6	TOB	2 TT=706	LENGTH RATE
32203 200	PATH 70001	1.2	60011	00	52 120
32163 TUS M E	END 50 TASK	6	JOB	2 TI=706	J
32163 TUS MS	START 52 TASK	6	JOB	2 TI=706	LENGTH RATE
	PATH 70001	12	60011		4 120
32163 TUS M E	END 52 TASK	6	JOB	2 TI=706	
32163 TUS MS	START 53 TASK	6	JOB	2 TI=706	LENGTH RATE
	PATH 70001	13	60016		36 120
32163 TUS M E	END 53 TASK	6	JOB	2 TI=706	
32163 TUS MS	START 8 TASK	6	JOB	2 TI=706	LENGTH RATE
	START 8 TASK PATH 70001	13	60012		2 120
32103 TUS M E	END 8 TASK	b	JOB	2 TI=706	2 120
32163 TUS MS	START 12 TASK	6	JOB	2 TI=706	LENGTH RATE
32163 TUS MS	PATH 70001	10	60009		12 120
32163 TUS M E	END 12 TASK	6	JOB	2 TI=706	
32163 TUS MS	START 14 TASK	6	JOB	2 TI=706	LENGTH RATE
	PATH 70001	11	60010		10 120
32163 TUS M E	END 14 TASK	6	JOB	2 TI=706	
32163 _. TUS MŠ	START 16 TASK	6	JOB	2 TI=706	LENGTH RATE
	PATH 70001	12	60011		10 120
32163 TUS M E 32163 TUS MS 32163 TUS M E 32163 TUS MS 32163 TUS M E 32163 TUS MS	end 16 task	6	JOB	2 TI=706	
32163 TUS MS	START 18 TASK	- 6	JOB	2 TI=706	LENGTH RATE
	144411 ,0001		00012		2 140
32163 TUS M E	END 18 TASK	6			
32163 TUS MS	START 24 TASK	6	JOB		
	PATH 70001	13	60016		6 120
32163 TUS M E	END 24 TASK	6			
32163 TUS MS	START 26 TASK	. 6	JOB		LENGTH RATE
20160 mga W P	PATH 70001	11	60014		2 120
32163 TUS M E	END 26 TASK	6		2 TI=706	
32163 TUS MS	START 6 TASK	6	JOB		
39163 mir V 2	PATH 70001	12	60011		12 120
32163 TUS M E	END 6 TASK START 10 TASK	6	JOB JOB		
32163 TUS MS	START 10 TASK PATH 70001	6 12	60011	2 TI=706	LENGTH RATE 2 120
32163 TUS M E	END 10 TASK	12			
32163 TUS MS		6			
74103 109 M9	START 20 TASK	12			2 120
	PATH 70001	14	60011		2 120

						•						
32163	TUS	ME		END 20	TASK		6	JOB	2	TI=706		
				START 22	TASK		6	JOB JOB	2	TI=706	LENGTH	RATE
	_			PATH 700	001			60015			6	
32163 32163 32163	TUS	ΜЕ		END 22	TASK		6	JOB	2	TI=706		
32163	TUS	MS		START 9	TASK		6	JOB	2	TI=706	LENGTH	RATE
				PATH 600	12	13		70001			24	120
32163	TUS	ΜE		END 9	TASK		6	JOB JOB	2	TI=706		
32163	TUS	MS		START 13			6					RATE
				PATH 600	909	10		70001			32	120
32163	TUS	ΜE			TASK		6	JOB JOB	2	TI=706		
32163	TUS	MS		START 15	TASK		6					
						11		70001			34	120
32163					TASK		6		2	TI=706		
32163	TUS	MS			TASK		6	JOB	2	TI=706	LENGTH	
				PATH 600				70001				120
32163					TASK		6					
32163	TUS	MS			TASK		6					
				PATH 600	112	13	_	70001				120
32163				-	TASK		6					> 4 IDT
32163	TUS	MS			TASK		6					
20162	m				016	-	,	70001	~	mr_70 <i>c</i>	26	120
32163				END 25			6					D A MID
32163	TUS	MS		START 27	TASK	11	6					
32163	mite	W 17			7 TASK		6	70001 JOB	1	TT-706	12	120
32163				START				JOB	2	TT-706	TENCTH	RATE
22103	105	MS)11		_	70001				
32163	פוזים	мк			7 TASK		6					120
32163				START 1								RATE
54105	100	110			011			70001				120
32163	TUS	мЕ		END 1	L TASK		6					
				START 2								RATE
					011	12		70001			14	
32163	TUS	мЕ		END 2	L TASK		6			TI=706		
32163	TUS	MS		START 2	3 TASK		6	JOB	2	TI=706	LENGTH	RATE
				PATH 600	015	12		70001			18	120
32163	TUS	ΜE		END 2	3 TASK		6	JOB	2	TI=706		
32165	TUS	ΜE		END 5	B TASK		7	JOB	2	TI=707		
32165	TUS	\mathbf{T}	Į.	INTERRUP	r task		6			TI=706		
32165		T	X	EXECUTING START 23 PATH 700 START 25	G TASK		7			TI=707		
32165	TUS	MS		START 2	B TASK		7				LENGTH	
				PATH 70	003			70001	_		256	120
32165	TUS	MS		START 2	9 TASK		7		2	TI=707		RATE
					001	2	_	70003	_		256	120
32167				END 2			7	JOB		TI=707		
32167				END 2			7	JOB		TI=707	T Firemit	D 4 mp
32167	TUS	MS		START 2			7	JOB 70001	2	TI=707		RATE
22167	mu.	uc			002	1	7	70001 JOB	'n	TI=707	256	120 F'TE
32167	105	m5		START 29	9 TASK 001	2	1	70002	2	11=/0/	256	170
32169	wite	мп		END 2			7	JOB	2	TI=707	250	1 20
32169				END 2			7	JOB		TI=707		
32169			E	END 2	TASK		7	JOB JOB		TI=707		
32169			х	EXECUTIN			6	JOB		TI=706		
32170				END 5			34	JOB		TI=723		
32171				START 5			6	JOB			LENGTH	RATE
					001	10	_	60017		· - -	72	120
32171	TUS	МE		END 5			6	JOB	2	TI=706		
32171				START 5			6	JOB			LENGTH	RATE
					001	11		60010			52	120

		E	END	50	TASK		6	JOB				
32171	TUS MS		START PATH	52	TASK		6	ЈОВ				
			PATH	7000	1	11		60010			4	120
32171	TUS M	<u>u</u>	מונים	22	TUDIC		U	300	2	TI=706		
32171	TUS MS		START	53	TASK				2	TI=706	LENGTH	
			PATH	7000	1	12	_	60015 JOB	_		36	120
32171	TUS M	E	END	53	TASK		6	JOB	2	TI=706		D 1 mm
32171	TUS MS		START	26	TASK		6					
22171	שנום אני	E	END	7000	TAGE			60013 JOB				120
22171	TUO ME	Ŀ	END END	6			6		2	TT-700	TRACTU	DATE
341/1	IUS MS		PATH	7000				60010	2	17-100	12	120
32171	TUS M			7000 6	TASK	11	6	TOB	2	TT=706	12	120
32171	THS MS	-	START	10			6	JOB JOB	2	TT=706	LENGTH	RATE
2~~.	100 110						•	60010	_	11 ,00	2	120
32171	TUS M	Ε	END	10	TASK		6	JOB	2	TI=706	_	
32171	TUS MS		START	20	TASK		6	JOB JOB	2	TI=706	LENGTH	RATE
			PATH	7000	1	11		60010			2	120
32171	TUS M	Ε	END START	20	TASK TASK 1 TASK TASK		6	JOB 703 60014	2	TI=706		
32171	TUS MS			22	TASK		6	غرية	2	TI=706	LENGTH	RATE
			PATH	7000	1	11		60014			6	i20
32171	TUS M	E	END	22	TASK		6	JOB	2	TI=706		
32171	TUS MS		START	50	TASK		6	JOB	2	TI=706	LENGTH	RATE
		_	PATH		1	10	_	60009	_		52	120
32171	TUS M	E	END		TASK		6	JOB	2	TI=706		
32171	TUS MS		START			10	6	JOB				
20171	mud w	m.	PATH	7000	'L	10	,	60009	•	mT_706	4	120
341/1	TUS M !	E	END	52 53			6 6	JOB JOB	2	TI=706	I DMCTH	DATE
34171	109 119		PATH	7000	IMOV	11	0		4	11-700	TENGIU 36	120
			END	53	TASK	1-	6	JOB	2	TT=706	20	120
	TUS MS		START				ó	JOB	2	TT=706	LENGTH	RATE
5=1.1	100 110		PATH		3	10		70001	-	11 ,00	12	120
32171	TUS M		END	27	TASK		6	JOB				
	TUS MS		START	7	TASK		6	JOB			LENGTH	RATE
			PATH	6001	TASK 0	11					56	120
32171	TUS M 1	Ξ	END	7	TASK		6	JOB				
32171	TUS MS		START PATH END	11	TASK O TASK		6	JOB				
	•		PATH	6001	0	11		70001			28	120
	TUS M	E	END START PATH	11	TASK				2	TI=706		
32171	TUS MS		START	21	TASK		6	JOB				
22171	muc M 1					11	6	70001 JOB	ח	TT-704	14	120
	TUS M		END	21			-		2	TI-706	LENGTH	DATE
341/1	TUS MS		START		TASK 4			JOB 7000I		11-700	18	120
32171	TUS M	£			TASK	11	6			TT=706		120
	TUS MS		START				6	JOB				RATE
5-41-			PATH		1	10	_	60013				120
32171	TUS M	Ε	END				6					
	TUS MS		START				6				LENGTH	RATE
			PATH	7000	1	10		69009			12	120
32172	TUS M	E	END	6	TASK		6	JOB	2	TI=706		
32172	TUS MS		START	10	TASK		6	JOB			LENGTH	RATE
			PATH	7000		10		60009			2	120
	TUS M		END				6					
32172	TUS MS		START				6	JOB			LENGTH	
20172	mrr6 34 3		PATH			10		60009			2	120
	TUS M		END				6					DACE
321/2	TUS MS		START			10				TT=\00		RATE
			PATH	7000	т	10		60013			6	120

32172 TUS M E	END 22 TASK	6	ĴОВ	2 TI=706		
32172 TUS MS	START 7 TASK	6	JOB	2 TI=706	LENGTH	RATE
	PATH 60009	10	70001		56	120
32172 TUS M E	END 7 TASK	6		2 TI=706		
32172 TUS MS	START II TASK	6		2 TI=706		RATE
3-1,- 100	PATH 60009	10	70001		28	120
32172 TUS M E	END 11 TASK	6		2 TI=706		
32172 TUS MS	START 21 TASK	6		2 TI=706		RATE
32172 100 110	PATH 60009	10	70001		14	120
32172 TUS M E	END 21 TASK	6		2 TI=706		120
32172 YUS MS	START 23 TASK	6		2 TI=706		RATE
32172 103 HS	PATH 60013	10	70001		18	120
32172 TUS M E	END 23 TASK	6		2 TI=706		120
32172 TUS T E	END ZJ IASK	6	JOB	2 TI=706		
32172 TUS T X		9	JOB	2 TI=700		
		9	JOB JOB	2 TI=709		
32175 TUS T X	EXECUTING 1ASK	10	JOB	2 TI=710		
32186 TUS T E	END TASK	10	JOB	2 TI=710		
32186 TUS T X	EXECUTING TASK	34	JOB	2 TI=723		
32186 TUS T E	END TASK	34	JOB	2 TI=723		
32200 TUS T X	EXECUTING TASK	14	JOB	2 TI=714		
32200 TUS T E	END TASK	14	JOB	2 TI=714		
32200 TUS T X	EXECUTING TASK	34	JOB	2 TI=723		
32200 TUS MS	START 59 TASK	34	JOB	2 TI=723		RATE
	PATH 60027	0	70001		10	1
	INTERRUPT TASK	34		2 TI=723		
32201 TUS 1 X	EXECUTING TASK	7	JOB	2 TI=707		
32201 TUS MS	START 58 TASK	7		2 TI=707	_	
	PATH 70001	24				120
32201 TUS MS	START 28 TASK	7				RATE
	PATH 70004	1	70001		256	120
32201 TUS MS	START 29 TASK	7		2 TI=707	LENGTH	RATE
	PATH 70001	2	70004		256	120
32203 TUS M E	end 28 task	7	JOB	2 TI=707		
32203 TUS M E	end -29 task	7	JOB	2 TI=707		
32203 TUS T W	MSG WAIT TASK	7	JOB	2 TI=707		
32203 TUS T X	EXECUTING TASK	6	JOB	2 TI=706		
32203 TUS MS	START 51 TASK	6	JOB	2 TI=706	LENGTH	RATE
•	PATH 70001	13	60012		48	120
32203 TUS M E	END 51 TASK	6	JOB	2 TI=706		
32203 TUS MS	START 54 TASK	6	JOB	2 TI=706	LENGTH	RATE
	PATH 70001	10	60018		72	120
32203 TUS M E	END 54 TASK	6	JOB	2 TI=706)	
32203 TUS MS	START 50 TASK	6	JOB	2 TI=706	LFNGTH	RATE
	PATH 70001	12	60011		52	120
32203 TUS M E	END 50 TASK	6	JOB	2 TI=706	,	
32203 TUS MS	START 52 TASK	6		2 TI=706	LENGTH	RATE
	PATH 70001	12	60011		4	120
32203 TUS M E	END 52 TASK	6			1	
32203 TUS MS	START 53 TASK	6		2 TI=706	LENGTH	RATE
	PATH 70001		60016			120
32203 TUS M E	END 53 TASK	- 6	JOB	2 TI = 706		
32203 TUS MS	START 8 TASK	6		2 TI=706	LENGTH	RATE
	PATH 70001		60012		2	120
32203 TUS M E	END 8 TASK	6	JOB.	2 TI=706	ı	
32203 TUS MS	START 12 TASK	6		2 TI=706	LENCTH	RATE
52205 Tub NB	PATH 70001	_	60009			120
32203 TUS M E	END 12 TASK	£	FOODS FOIL	2 TT=704	i	
32203 TUS MS	START 14 TASK	6	JOB JOB	2 TT=706	LENCTU	RATE
J2205 100 100	PATH 70001		60010		10	120
	IAIN /VUUL	TT	00010		10	140

	END 14 TASK START 16 TASK PATH 70001 END 16 TASK START 18 TASK PATH 70001 END 18 TASK START 24 TASK PATH 70001 END 24 TASK START 26 TASK PATH 70001 END 26 TASK PATH 70001 END 26 TASK START 6 TASK PATH 70001 END 70001 END 70001 END 70001 END 70001							
32203 TUS M E	END 14 TASK		6	JOB	2	TI=706		
32203 TUS MS	START 16 TASK		6	JOB	2	TI=706	LENGTH	RATE
	PATH 70001	12		60011			10	120
32203 TUS M E	END 16 TASK		6	JOB	2	TI=706		
32203 TUS MS	START 18 TASK		6	JOB	2	TI=706	LENGTH	RATE
	PATH 70001	13	_	60012	_		2	120
32203 TUS M E	END 18 TASK		6	JOB	2	TI=706		D 4 DD
32203 TUS MS	START 24 TASK		6	JOB	2	TT=706	LENGTH	RATE
	PATH 70001	13	_	60016	_		6	120
32203 TUS M E	END 24 TASK		6	TOR	Z	T1=706		n 1 mm
32203 TUS MS	START 26 TASK		ь	JOR	2	T1≃/U6	LENGTH	RATE
	PATH /UUUI	ΤŢ	_	60014	•	mT_706	Z	120
32203 TUS M E	END 25 TASK		0	JOB	2	TI=700	T DMCTH	DATE
32203 TUS MS	START 6 TASK	10	ь	JOB	2	TT=100	PENGIU	KMID
20002 1110 14 15	PAIR /UUUI	1.2	_	247D QUUTT	2	TT-704	12	120
322U3 TUS M E	END O LACK		6	JOB	2	TT-706	TENCTH	D ATE
32203 105 HS	DATE TO INSK	12	U	40011	~	11-700	200111	120
12202 THE W P	END 10 TASK START 20 TASK PATH 70001 END 20 TASK	12	a	100	າ	TT706	2	120
32203 TUB FL E	STADT 20 TASK		ĸ	TOB	2	TT=706	LENCTH	RATE
32203 105 MS	DATH ZOOO!	12	U	40011	_	11-100	DEMOTI	120
22202 THE M F	PATH 70001 END 20 TASK START 22 TASK PATH 70001 END 22 TASK START 9 TASK PATH 60012 END 9 TASK START 13 TASK PATH 60009 END 13 TASK	12	6	TOR	2	2T=706	-	120
32203 105 M	START 22 TASK		6	JOB	2	TI=706	LENGTH	RATE
32203 100 MB	PATH 70001	12	Ü	60015	-	12 700	б	120
32203 THS M E	END 22 TASK	42	6	JOB	2	TI=706	·	
32203 TUS MS	START 9 TASK		6	JOB	5	TI=706	T.ENGTH	RACE
32203 100 110	PATH 60012	13	ŭ	70001	_	11 ,00	24	120
32203 THS M E	END 9 TASK		6	JOB	2	TI=706		
32203 THS MS	START 13 TASK		6	JOB	2	TI=706	LENGTH	RATE
32-00 10	PATH 60009	10	-	70001	_		32	120
32203 TUS M E	PATH 60009 END 13 TASK START 15 TASK PATH 60010 END 15 TASK START 17 TASK PATH 60011 END 17 TASK START 19 TASK START 19 TASK PATH 60012 END 19 TASK START 25 TASK PATH 60016 END 25 TASK START 27 TASK		6	ЈОВ	2	TI=706		
32203 TUS MS	START 15 TASK		6	JOB	2	TI=706	LENGTH	RATE
	PATH 60010	11		70001			34	120
32203 TUS N E	END 15 TASK		6	JOB	2	TI=706		
32203 TUS MS	START 17 TASK		6	JOB	2	TI=706	LENGTH	RATE
	PATH 60011	12		70001			30	120
32203 TUS M E	END 17 TASK		6	JOB	2	TI≂706		
32203 TUS MS	START 19 TASK		6	JOB	2	TI=706	LENGTH	RATE
•	PATH 60012	13		70001			14	120
32203 TUS M E	END 19 TASK		6	JOB	2	TI=706		
32203 TUS MS	START 25 TASK		6	JOB	2	TI=706	LENGTH	RATE
	PATH 60016	13		70001			26	120
32203 TUS M E	END 25 TASK		6	JOB	2	TI=706		
32203 TUS MS	,					TI=706		
	PATH 60014		_	70001	_		12	120
32203 TUS M E	END 27 TASK		6	JOB	2	TI=706		n (mr
32203 TUS MS	START 7 TASK		б					
	PATH 60011	12				mT. 70/	56	120
32203 TUS M E	END 7 TASK		6		2	TI=/06	T DMOSTI	מותי א נד
32203 TUS MS	START 11 TASK	10	6	70001			28	120
32203 TUS M E	PATH 60011	12			•	TT-706		120
	END 11 TASK		6		- 2	エエー 700	T WMCTH	መለጥፑ
32203 TUS MS	START 21 TASK PATH 60011	10	6			11-700	14	
32203 TUS M E	END 21 TASK	14	_			TT=706		1.40
32203 TUS MS	START 23 TASK		6 6		2	TT=700	LENGTH	RATE
75503 TOO NO	PATH 60015	12		70001				
32203 TUS M E			6	JOB	,	TT=706	-5	
32205 TUS M E			7		2	TI=707	*	
32205 TUS T	I INTERRUPT TASK		6					
			_		_			

32205	TUS	T	X	EXECUT	ING	TASK		7	JOB	2	TI=707		
32205	TUS	MS		START PATH	28	TASK		7	JOB				
				PATH	7000	3	1		70001			256	120
32205	TUS	MS		START	29	TASK							
				PATH END	7000	1 TASK	2		70003		TI=707	256	120
32207		ΜE		END	28	TASK		7	JOB	2	TI=707		
32207		ΜE		END	29	TASK		7	JOB				
32207	TUS	MS		START	28	TASK		7	JOB				
****				PATH	7000	2	1	_		_		256	120
32207	TUS	MS		START	29	TASK		7			T1=/0/		
20000	mııs			PATH END END	7000	1	2	-	70002		MT. 707	256	120
32209 32209	TUS	PI E		END	20	TASK TASK		7	JOB JOB	4	TI=/U/		
32209					2,5	TASK		7	JOB	2	TI=707		
32209	100	T.	v	EXECUT				6			TI=707		
32209			Λ.			TASK		6				LENGTH	ратг
32207	100	110		START PATH	7000		10	_	60017			72	
32209	THE	мЕ		END				6	JOB	2	TT=706	, -	120
32209	TUS	MS		START	50	TASK		6	JOB	2	TT=706	LENGTH	RATE
02207		***		END START PATH	7000	I	11		60010	_	11 .00	52	120
32209	TUS	ΜE		END	50	TASK		6	60010 JOB	2	TI=706		
32209	TUS	MS		START	52	TASK		6	JOB	2	TI=706	LENGTH	RATE
				END START PATH	7000	1	11		60010		•	4	120
32209	TUS	ΜE		END START PATH	52	TASK		6		2	TI=706		
32209	TUS	MS		START	53	TASK		6	JOB	2	TI=706	LENGTH	RATE
				PATH	7000	1	12		60015			36	120
32209	TUS	ΜE		END START PA'I'H	53	TASK		6		2	TI=706		
32209	TUS	MS		START	26	TASK	_	6		2	TI=706	LENGTH	RATE
				PA'ı'H	7000	1	10	_	60013			2	120
32209	TUS	ME		END	26			6		2	TI=706		
32209	TUS	MS			7000	TASK	1.1						
22200	mite	мв		PATH					60010 JOB	^	mT_706	12	120
32209	100	MC		CHADIN		TASK		6 6	JOB	2	T1=700	I ENCTH	D 6 /PE
32209	105	rio		START PATH	7000	l	11						
32200	THE	мж		END	10	TASK	11	6	60010 JOB	2	TT=706	2	120
32209	THE	MS		END START PATH	20	TASK			JOB	2	TT=706	LENGTH	RATE
55				PATH	7000	1		Ŭ					
32209	TUS	ME		DMD	20	TTA CTZ		4	TOP	2	77-704		
32209	TUS	MS		STAI:T	22	TASK		6	JOB	2	TI=706	LENGTH	RATE
				PATH	7000	1	11		JOB 60014 JOB			6	120
32209	TUS	ΜE		ENL	22	TASK		6	JOB	2	TI=706		
32209	TUS	MS		START	50	TASK		6	JOB	2	TI=706	LENGTH	RATE
				PATH					60009				120
32209						TASK		6	JOB	2	TI=706		
32209	TUS	MS				TASK			JOB				
						I	10	_	60009	_		. 4	120
32209				END	52	TASK			JOB				
32209	TUS	MS				TASK		6				LENGTH	
22200	muc	M 17)l	11	_	60014 JOB	-	mT-706	36	120
32209		MS		END START				6		2	T1=700	I ENCTH	n ATE
32209	103	rio		PATH		.3	10	o	70001				120
32209	THE	МЕ		END		TASK	10	6					120
		MS				TASK		6	JOB	2	TT=706	LENGTH	RATE
						.0	11		70001				120
32209	TUS	ΜE				TASK		6	JOB	2	TI=706		
						TASK		6		2	TT-706	T TESTOPHI	DATE
32209	TUS	MS		SIAKI	TT	THON		O	900	~	TT-100	PEMOTH	101114
32209	TUS	MS		PATH		.0			70001 JOB			28	120

()

32209 TUS MS	START 21 TASK	6				RATE
	PATH 60010	11	70001		14	120
32209 TUS M E	END 21 TASK	6	JOB	2 TI=706		
32209 TUS MS	START 23 TASK	6	JOB			RATE
	PATH 60014	11	70001			120
32209 TUS M E	END 23 TASK	6	JOB			
32209 TUS MS	START 53 TASK	6		2 TI=706		RATE
	PATH 70001	10	60013			120
32209 TUS M E	end 53 Task	۰6		2 TI=706		
32210 TUS M E	end 59 task	34	JOB	2 TI=723		
32210 TUS MS	start 6 task	6	JOB	2 TI=706		
	PATH 70001	10	60009			120
32210 TUS M E	end 6 task	6		2 TI=706		
32210 TUS MS	START 10 TASK	6		2 Tl=706		
	PATH 70001	10	60009			120
32210 TUS M E	END 10 TASK	6		2 TI=/06		
32210 TUS MS	START 20 TASK	6		2 TI=706		
	PATH 70001	10	60009		2	120
32210 TUS M E	end 20 task	6	JOB	2 TI=706		
32210 TUS MS	START 22 TASK	6	JOB			
	PATH 70001	10	60013			120
32210 TUS M E	end 22 task	6		2 TI=706		
32210 TUS MS	START 7 TASK	6		2 TI=706		
	PATH 60009	10	70001			120
32210 TUS M E	END 7 TASK	6	JOB			
32210 TUS MS	START 11 TASK	6		2 TI=706		
	PATH 60009	10	70001			120
32210 TUS M E	END 11 TASK	6		2 TI=706		
32210 TUS MS	START 21 TASK	6	JOB	2 rI=706		
	PATH 60009	10	70001			120
32210 TUS M E	END 21 TASK	6	JOB			
32210 TUS MS	START 23 TASK	6		2 TI=706		RATE
	PATH 60013	10	700 ⁻ 01		18	120
32210 TUS M E	END 23 TASK	6		2 TI=706		
32210 TUS T E	-END TASK	6	JOB	2 TI=706		
32210 TUS T X	EXECUTING TASK	9	JOB JOB	2 TI=709		
32212 TUS T E	END TASK	9	JOB	2 TI=709		
32212 TUS T X 32213 TUS · T X	EXECUTING TASK	32	JOB	2 TI=722		
	EXECUTING TASK	11	JOB TOB	2 TI=711 2 TI=722		
32213 TUS T E 32213 TUS MS	END TASK START 32 TASK	32 11	JOB JOB	2 TI=722 2 TI=711	LEMOTH	RATE
32213 103 MS	PATH 70001	24	60095			120
32215 TUS M E		11	JOB			120
32215 TUS MS	START 33 TASK	11	JOB	2 TI=711		RATE
32213 103 M3	PATH 60095	24	70001	2 11-/11	256	120
32215 TUS T W	MSG WAIT TASK	11	JOB	2 TI=711	250	120
32215 TUS T X	EXECUTING TASK	34	JOB JOB	2 TI=723		
32217 TUS M E	END 33 TASK	11	JOB	2 TI=711		
	INTERRUPT TASK	34	JOB	2 TI=723		
32217 TUS T X	EXECUTING TASK	11	JOB	2 TI=711		
32217 TUS T E	END TASK	11	JOB	2 TI=711		
32217 TUS T X	EXECUTING TASK	34	JOB	2 TI=723		
32217 TUS T E	END TASK	34	JOB	2 TI=723		
32217 TUS T X	EXECUTING TASK	35	JOB	2 TI=724		
32217 TUS MS	START 55 TASK	35	JOB	2 TI=724	LENGTH	RATE
J 100 M	PATH 70001	6	60001	,	1024	120
32217 TUS MS	START 56 TASK	35	JOB	2 TI=724		RATE
	PATH 70001	7	60002	,	1024	120
32217 TUS MS	START 57 TASK	35	JOB	2 TI=724		RATE
·· -	PATH 70001	8	60003	-	1024	120

32225	TUS	ΜE		END	55	TASK		35	JOB	2	TI=724		
32225	TUS	ΜE		END	56	TASK		35	JOB	2	TI=724		
32225	TUS	ΜE		END	57	TASK		35	JOB	2	TI=724		
32229	TUS	T	E	END		TASK		35	JOB	2	TI=724		
32240	TUS	Т	Х	EXECUTI	NG	TASK		13	JOB	2	TI=713		
32240		T	X	EXECUTI	NG	TASK		14	JOB	2	TI=714		
32240 32240	TUS	T	E	END		TASK		13	JOB	2	TI=713		
32240	TUS	T	E	END		TASK		14	JOB-	2	TI=714		
32240	TUS	T	Х	EXECUTI	NG	TASK		34	JOB	2	TI=723		
32240				START	59	TASK		34	JOB	2	TI=723	LENGTH	
				PATH 6	5002	7	0		70001			10	I
32241	TUS	т	I	INTERRU	PT	TASK		34	JOB	2	TI=723		
32241	TUS	T	X	EXECUTI	NG	TASK		7	JOB JOB JOB 60095 JOB 70001 JOB JOB JOB JOB JOB	2	TI=707		
32241	TŲS	MS		START	58	TASK		7	JOB	2	TI=707	LENGTH	RATE
				PATH 7	7000	l	24		60095			512	120
32241	TUS	MS		START	28	TASK		7	JOB	2	TI=707	LENGTH	RATE
				PATH 7	70004	4	1		70001			256	120
32241	TUS	MS		START	29	TASK		7	JOB	2	TI=707	LENGTH	RATE
				PATH 7	7000	1	2		70004			256	120
32243	TUS	ΜE		END	28	TASK		7	JOB	2	TI=707		
32243	TUS	ΜE		END	29	TASK		7	JOB	2	TI=707		
32243	TUS	T	W	MSG WAI	ΣT	TASK		7	JOB	2	TI=707		
32243	TUS	T	X			TASK		6	JOB	2	TI=706		
32243	TUS	MS		START	51	TASK		6	JOB	2	TI=706	LENGTH	RATE
				PATH 7 END START PATH 7	7000	I	13		60012			48	120
32243	TUS	ΜE		END	51	TASK		6	JOB JOB	2	TI=706		
32243	TUS	MS		START	54	TASK		6	JOB	2	TI=706	LENGTH	RATE
				PATH 7	7000	1.	10		60018			/2	120
32243	TUS	ΜE		END	54	TASK		6	JOB JOB	2	TI=706		
32243	TUS	MS		START		TASK			JOB	2	TI=706	LENGTH	RATE
				TUTH 1	7000				60011			52	120
32243	TUS	ΜE		END START	50	TASK		6		2	TI=706		
32243	TŲS	MS		START	52	TASK		6	JOB	2	TI=706	LENGTH	RATE
				PATH /	VUUU.	1,			60011	_		4	120
32243	TUS	ΜE		END		TASK		6	JOB	2	TI=706		
32243	TITLE									_			RATE
	TUS	MS		START		TASK			JOB	2	11=/00	LENGTH	
				PATH 7	7000	1	13		JOB 60016	2		LENGTH 36	120
32243	TUS	ΜЕ		END	7000 53	I TASK	13		JOB 60016 JOB	2	TI=706	LENGTH 36	120
32243	TUS	ΜЕ		END	7000 53	I TASK TASK	13	6 6	JOB 60016 JOB JOB	2 2 2	TI=706 TI=706	LENGTH 36 LENGTH	120 RATE
32243 32243	TUS TUS	M E MS		END START PATH 7	7000 53 8 7000	I TASK TASK I	13	6 6	JOB 60016 JOB JOB 60012	2 2 2	TI=706 TI=706	LENGTH 36 LENGTH 2	120 RATE
32243 32243 32243	TUS TUS	M E MS		END START PATH 7 END	7000 53 8 7000	I TASK TASK I	13	6 6	JOB 60016 JOB JOB 60012	2 2 2	TI=706 TI=706	LENGTH 36 LENGTH 2	120 RATE 120
32243 32243	TUS TUS	M E MS		END START PATH 7 END START	7000 53 8 7000 8 12	I TASK TASK I TASK TASK	13	6 6 6	JOB 60016 JOB JOB 60012 JOB JOB	2 2 2 2 2	TI=706 TI=706 TI=706 TI=706	LENGTH 36 LENGTH 2 LENGTH	RATE 120 RATE
32243 32243 32243 32243	TUS TUS TUS	M E MS M E MS		END START PATH 7 END START PATH 7	7000 53 8 7000 8 12 7000	I TASK TASK I TASK TASK I	13	6 6 6	JOB 60016 JOB JOB 60012 JOB JOB 60009	2 2 2 2	TI=706 TI=706 TI=706 TI=706	LENGTH 2 LENGTH 12	120 RATE 120
32243 32243 32243 32243 32243	TUS TUS TUS TUS	M E MS M E MS		END START PATH 7 END START PATH 7	7000 53 8 7000 8 12 7000	TASK TASK TASK TASK TASK TASK TASK	13	6 6 6 6	JOB 60016 JOB JOB 60012 JOB JOB JOB JOB 50009	2 2 2 2 2	TI=706 TI=706 TI=706 TI=706 TI=706	LENGTH 2 LENGTH 12	120 RATE 120 RATE 120
32243 32243 32243 32243	TUS TUS TUS TUS	M E MS M E MS		END START PATH 7 END START PATH 7 END START	7000 53 8 7000 8 12 7000 12 14	TASK TASK TASK TASK TASK TASK TASK TASK	13 13 10	6 6 6	JOB 60016 JOB JOB 60012 JOB JOB JOB 50009 JOB JOB JOB	2 2 2 2 2 2 2	TI=706 TI=706 TI=706 TI=706 TI=706	LENGTH 36 LENGTH 2 LENGTH 12 LENGTH	RATE 120 RATE 120 RATE
32243 32243 32243 32243 32243 32243	TUS TUS TUS TUS TUS	M E MS M E MS M E MS		END START PATH 7 END START PATH 7 END START PATH 7	7000 53 8 7000 8 12 7000 12 14	TASK TASK TASK TASK TASK TASK TASK TASK TASK TASK	13	6 6 6 6	JOB 60016 JOB JOB 60012 JOB JOB 60009 JOB JOB JOB JOB G0010	2 2 2 2 2 2 2	TI=706 TI=706 TI=706 TI=706 TI=706 TI=706	LENGTH 2 LENGTH 12	120 RATE 120 RATE 120
32243 32243 32243 32243 32243 32243 32243	TUS TUS TUS TUS TUS	M E MS M E MS M E MS		END START PATH 7 END START PATH 7 END START PATH 7 END	7000 53 8 7000 8 12 7000 12 14 7000	TASK TASK TASK TASK TASK TASK TASK TASK	13 13 10	6 6 6 6 6	JOB 60016 JOB JOB 60012 JOB JOB 60009 JOB	2 2 2 2 2 2 2 2	TI=706 TI=706 TI=706 TI=706 TI=706 TI=706 TI=706	LENGTH 2 LENGTH 12 LENGTH 12 LENGTH 10	120 RATE 120 RATE 120 RATE 120
32243 32243 32243 32243 32243 32243	TUS TUS TUS TUS TUS	M E MS M E MS M E MS		END START PATH END START PATH END START PATH PATH END START PATH END START	7000 53 8 7000 8 12 7000 12 14 7000	I TASK TASK I TASK	13 13 10	6 6 6 6	JOB 60016 JOB JOB 60012 JOB JOB 60009 JOB	2 2 2 2 2 2 2 2 2 2	TI=706 TI=706 TI=706 TI=706 TI=706 TI=706 TI=706 TI=706	LENGTH 2 LENGTH 12 LENGTH 10 LENGTH	120 RATE 120 RATE 120 RATE 120 RATE 120
32243 32243 32243 32243 32243 32243 32243 32243	TUS TUS TUS TUS TUS TUS TUS	M E MS M E MS M E MS M E MS		END START PATH END START PATH END START PATH FATH END START PATH END START PATH FATH FATH FATH FATH	7000 53 8 7000 8 12 7000 14 7000 16 7000	TASK TASK TASK TASK TASK TASK TASK TASK	13 13 10	6 6 6 6 6	JOB 60016 JOB JOB 60012 JOB 50B 60009 JOB JOB 50B 60010 JOB JOB 50B 50B 50B 50B 50B 50B 50B 50B 50B 50	2 2 2 2 2 2 2 2 2 2	TI=706 TI=706 TI=706 TI=706 TI=706 TI=706 TI=706	LENGTH 2 LENGTH 12 LENGTH 10 LENGTH 10	120 RATE 120 RATE 120 RATE 120
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32243 32243 32243 32243 32243 32243 32243 32243 32243 32243 32243 32243	TUS	M E MS		END START PATH END	7000 53 8 7000 8 12 7000 12 14 7000 16 18 7000 18 24 7000 24 26 7000	I TASK TASK	13 10 11 12 13	6 6 6 6 6 6 6 6 6	JOB 60016 JOB JOB JOB JOB JOB 60010 JOB 60011 JOB 60011 JOB 60012 JOB JOB 60016 JOB JOB 60016 JOB	2 22 22 22 22 22 22	TI=706 TI=706 TI=706 TI=706 TI=706 TI=706 TI=706 TI=706 TI=706 TI=706 TI=706	LENGTH 2 LENGTH 12 LENGTH 10 LENGTH 10 LENGTH 2 LENGTH 2 LENGTH 2 LENGTH 6	RATE 120
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32243 32243 32243 32243 32243 32243 32243 32243 32243 32243 32243 32243	TUS	M E MS M E		END START PATH END	7000 53 8 7000 8 12 7000 12 14 7000 16 18 7000 18 24 7000 24 26 7000 6 6	I TASK TASK	13 10 11 12 13	6 6 6 6 6 6 6 6 6	JOB 60016 JOB JOB JOB JOB JOB 60010 JOB 60011 JOB 60011 JOB 60012 JOB JOB 60016 JOB JOB 60016 JOB	2 22 22 22 22 22 22 22	TI=706 TI=706 TI=706 TI=706 TI=706 TI=706 TI=706 TI=706 TI=706 TI=706 TI=706 TI=706	LENGTH 2 LENGTH 12 LENGTH 10 LENGTH 10 LENGTH 2 LENGTH 2 LENGTH 2 LENGTH 6	RATE 120

32243 TUS M	E END START PATH E END START PATH E END START PATH E END START PATH E END	6 TASK		6	JOB	2	TI=706		
32243 TUS MS	START	10 TASK		6	JOB .	2	TI=706	LENGTH	RATE
	PATH	70001	12		60011			2	120
32243 TUS M	e end	10 TASK		6	JOB	2	TI=706		
32243 TUS MS	START	20 TASK		б	JOB.	2	TI=706	LENGTH	RATE
	PATH	70001	12		60011			2	120
32243 THS M	E END	20 TASK		6	JOB ·	2	TT=706	-	
32243 THS MS	START	22 TASK		6	JOB	2	TT=706	LENGTH	RATE
32243 100 HD	РАТН	70001	12	-	60015	~		6	120
22272 mile M	e emi	.000±		6	TOR	:2	TT=706.	v	120
22243 TOO EL	መፈካለው መረተላቸው	O TACK		۵	TOR	2	サエー 700	TEMOTE	. DAME
32243 108 MB	DAMII	5 1406	12	U	70001	2	TT-100	DENGIR	120
10041 mme M	CHIU	0. ሞላሮፕ	13	_	10001	2	ጥፒ7ብሩ	44	120
32243 TUS FI	START PATH E END	J J.M.O.C.		0	JUB	2	DT-706	T ENGINE	D AME
32243 TUS MS	START	13 YASK	10	0	108	2	TT=/U0	LENGTH	RATE
	PATH	60009	10	_	10001	_		32	120
32243 TUS M	E END	13 TASK		5	JOR	2	T1=/06		
32243 TUS MS	START	15 TASK		6	JOB	2	TI=706	LENGTH	RATE
	PATH	60010	11		70001			34	120
32243 TUS M	e end	15 TASK		6	JOB	2	TI=706		
32243 TUS MS	START	I7 TASK		6	JOB	2	TI=706	LENGTH	RATE
	PATH	60011	12		70001			30	120
32243 TUS M	E END	17 TASK		6	JOB	2	TI=706		
32243 TUS MS	START	19 TASK		6	JOB	2	TI=706	LENGTH	RATE
	PATH	60012	13		70001			14	120
32243 TUS M	E END	19 TASK		6	JOB	2	TI=706		
32243 TUS MS	START	25 TASK		6	JOB	2	TI=706	LENGTH	RATE
	PATH	60016	13		70001			26	120
32243 TUS M	E END START PATH E END START PATH	25 TASK		6	JOB	2	TI=706	_	
32243 TUS MS	START	27 TASK		6	JOB	2	TT=706	LENGTH	RATE
5 10 100 110	PATH	60014	11	•	70001	_	24 / 00	12	120
32243 THS M	E END	27 TASK		6	JOB	2	TT=706		****
32243 THE ME	E END START PATH	7 TACK		6	JOB	2	TT= 206	LENCTH :	DATE
32243 IOS MO	סותוני	60011	12	٠	70001	_	11-700	56	120
27275 mile M	מואק ש	7 ጥለሮሆ	1.2	c	7000I JOB	2	T-706	50	120
22243 TUB PL	E END -START PATH	7 IASK		6	JOB JOB	2	77-706	t PMOTH	D Amit
34443 TUB MB	DARI	11 TWOK	10	O	70001	4	11-700	PEMOTU.	KHID
20262 mile M	E END START PATH E END START PATH E END	11 2464	12	e	70001	2	mt704	20	120
32243 TUS M	e enii	II TASK		0	JOB	2	T1=/00		
32243 TUS MS	START	ZI TASK		b	JOR	Z	TT=\00	LENGTH	RATE
	PATH	60011	12		70001	_		14	120
32243 TUS M	E END	21 TASK		6	JOB	2	TI=706		
32243 TUS MS	START	23 TASK		6	JOB	2	TI=706	LENGTH	RATE
	PATH	60015	12		70001			18	120
32243 TUS N	e end	23 TASK		6	JOB	2	TI=706		
32245 TUS M	e end	58 TASK		7	JOB	2	TI=707		
32245 TUS	T I INTER	RUPT TASK		6	JOB	2	TI=706		
32245 TUS	T X EXECU	TING TASK		7	JOB	2	TI=707		
32245 TUS MS	START	28 TASK		7	JOB	2	TI=707	LENGTH	RATE
	PATH	70003	1		70001			256	120
32245 TUS MS				7	JOB	2	TI=707	LENGTH	RATE
	PATH	70001	2		70003			256	120
32247 TUS M		28 TASK		7	JOB	2	TI=707		.•
32247 TUS M		29 TASK		7	JOB		T1=707		
32247 TUS MS				ż	JOB			LENGTH	RATE
,,,	PATH	70002	1	•	70001	_		256	120
32247 TUS MS			-	7	JOB	2	TI=707	LENGTH	RATE
	PATH	70001	2	•	70002	-	/0/	256	120
32249 TUS M		28 TASK	_	7	JOB	2	TI=707	4.70	
32249 TUS M		20 TASK		7	JOB		TI=707		
32249 TUS M	T E END	TASK		7	JOB JOB		TI=707		
コムムサフ エリロ	T to trivin	THOU		1	OOD	~	11~101		

32249 TUS T X	EXECUTING TASK	6	JOB	2 TI=706		
32250 TUS M E 32251 TUS MS	end 59 task	34	JOB	2 TI=723		
32251 TUS MS	START 54 TASK	6	JOB	2 TI=706	LENGTH RA	ATE
	PATH 70001	10	60017		72 .	120
32251 TUS M E	END 54 TASK	6		2 TI=706	~ =====================================	
32251 TUS MS	START 50 TASK	. 6	10B	2 TI=/06	LENGTH RA	ATE
32251 TUS M E 32251 TUS MS 32251 TUS M E	END 50 TASK	11	,60010 JOB JOB	0 mx20¢	52 .	120
32251 TUS M E	COADO ES MACE	6	JUB	2 11=/00	Takonu D.	እ መነገታ
32251 EUS MB	DIAKI DZ IADK	11	50010	Z 11-700	LENGIA KI	715
32251 TUS M E	TAID FO TACK	6		2 TT-706	4	120
32231 TUB II B	ይክሁ ጋ2 IASK ይጥለውጥ 53 ጥለይሆ	6	TOB	2 TI=700	LENGTH R	ልጥፑ
322JI 103 PE	DIAMI 70001	12			36	
32251 THS M E	END 53 TASK	6		2 TT=706	50	-20
32251 TUS M E 32251 TUS MS 32251 TUS M E 32251 TUS MS 32251 TUS M E 32251 TUS MS	START 26 TASK	6	JOB	2 TT=706	LENGTH RA	ATE
32232 200 115	PATH 70001	10			2	1.20
32251 TUS M E	END 26 TASK	6	60013 JOB.	2 TI=706		
32251 TUS MS	START 6 TASK	6	JOB	2 TI≃706	LENGTH RA	ATE
	PATH 70001	11	60010		12	120
32251 TUS M E	END 26 TASK START 6 TASK PATH 70001 END 6 TASK START 10 TASK PATH 70001 END 10 TASK	6	JOB	2 TI=706		
32251 TUS MS	START 10 TASK	6	JOB	2 TI=706	LENGTH RA	ATE
	PATH 70001	11	60010 JOB JOB		2	120
32251 TUS M E	end 10 task	6	JOB	2 TI=706		
32251 TUS MS	START 20 TASK	6	JOB	2 TI=706	LENGTH RA	ATE
	PATH 70001	11	60010		2	120
32251 TUS M E 32251 TUS MS 32251 TUS M E 32251 TUS MS 32251 TUS M E	end 20 task	6	JOB JOB	2 TI=706		
32251 TUS MS	START 22 TASK	6				
50051 mmg \	PATH 70001	11	60014		6 .	120
32251 TUS M E	END 22 TASK	6	JOB JOB	2 T1=706	T TIME TO S	ı imm
32251 XUS M5	START DU TASK	ţ.				
29281 mile W D	PAIH /UUUI	10 6	60009	2 77-706	32 .	120
32251 TUS M E 32251 TUS MS	עסאני כל המאשה	6	JOB	2 TI-700	LENGTH RA	ነ ነ
JEEST TOO HS	PATH 70001	10	60009	2 11-700	A I	120
32251 THS M E	END -52 TASK	6	.TOR	2 TT=706		
32251 TUS M E 32251 TUS MS	START 53 TASK	6	JOB	2 TI=706	LENGTH RA	ATE
	PATH 70001	11	2005/		26 3	100
32251 TUS M E 32251 TUS MS . 32251 TUS M E 32251 TUS MS	END 53 TASK START 27 TASK PATH 60013 END 27 TASK START 7 TASK PATH 60010 END 7 TASK	6	JOB	2 TI=706		
32251 TUS MS .	START 27 TASK	6	JOB	2 TI=706	LENGTH RA	ATE
	PATH 60013	10	70001		12	120
32251 TUS M E	END 27 TASK	6	JOВ	2 TI=706		
32251 TUS MS	START 7 TASK	6	JOB	2 TI=706	LENGTH RA	ATE
	PATH 60010	11	70001		56	120
32251 TUS M E						
32251 TUS MS	START 11 TASK	. 6			LENGTH RA	
20051 mmg st p	PATH 60010	11	70001		. 28	120
32251 TUS M E	END 11 TASK	6		2 TI=706	TOMOGNI DA	A eroza
32251 TUS MS	START 21 TASK PATH 60010	6 11		2 TI≔706		120
32251 TUS M E	END 21 TASK		70001 JOB	2 TI=706	14	LZU
32251 TUS MS	START 23 TASK	6 6	JOB		LENGTH RA	ATE.
SHEST FOR HO	PATH 60014	11	70001	* **\AA		120
32251 TUS M E	END 23 TASK	- 6	JOB	2 TI=706	20 .	
32251 TUS MS	START 53 TASK	6	JOB	2 TI=706	LENGTH RA	ATE
	PATH 70001	10	60013			120
32251 TUS M E	END 53 TASK	6		2 TI=706		
32252 TUS MS	START 6 TASK	6	JOB		LENGTH RA	ATE
	PATH 70001	10	60009		12	120
32252 TUS M E	end 6 task	6		2 TI=706		
32252 TUS MS	START 10 TASK	6	JOB	2 TI=706	LENGTH RA	ATE

				PATH		1	10		60009 Job		8	2	120
32252	_			END	10	TASK		6	JOB	2	TI=706		
32252	TUS	MS		START	20			6	JOB				
	_			PATH	7000		10		60009				120
32252				END		TASK		6					
32252	TUS	MS		START	22	TASK		6				LENGTH	
				PATH	7000		10	_	60013				120
32252				END		TASK		6					D.1.00
32252	TUS	MS		START	7	TASK		6	JOB			LENGTH	
20050	mua			PATH	6000		10	,	70001				120
32252				END	7			6					n term
32252	TUS	MS		START	11 6000	TASK	10	6	JOB 70001			LENGTH	120
20252	muc	ме		PATH END	11		10	6				28	120
32252 32252	TUD	MC		START	21	TASK TASK		6				LENGTH	n Ame
34434	102	MO		PATH	6000		10		70001				120
32252	שווים	мъ		END	21	TASK	10	6					120
32252				START	23	TASK		6		2	TT-706	t EMCTH	DATE
36232	100	LIO		PATH	6001		10		70001		11-700		120
32252	THE	M W		END		TASK	10	6	•		TI=706	10	120
32252		T	E	END	23	TASK			JOB		TI=706		
32252			X	EXECUT	TNC			9		_	TI=709		
32255		T	E	END	LING	TASK		ģ	JOB		TI=709		
32255			χ	EXECU:	TNC			11	JOB	_	TI=711		
32255			11	START	32	TASK		11	JOB			LENGTH	RATE
J111JJ	-00	110		PATH	7000		24		60095		,		
32257	THS	ME		END	32		~~				TT=711		120
32257				START	33	TASK		11	JOB			LENGTH	RATE
				PATII		5	24		70001				120
32257	TUS	T	W	MSG WA		TASK		11			TI=711		
32257			х	EXECUT		TASK		10	JOB	2	TI=710		
32259	TUS	ΜE		END	33	TASK		11	JOB	2	TI=711		
32259	TUS	T	I	INTERI	RUPT	TASK		10	JOB	2	TI=710		
32259		T	Х	EXECUT		TASK		11	JOB	2	TI: 1		
32259		T	E	END		TASK		11	JOB	2	TI=711		
32259	TUS	T	Х	EXECU'	rING	TASK		10	JOB	2	TI=710		
32268	TUS	T	E	END		TASK		10	JOB	2	TI=710		
32268	TUS	T	X	EXECUT	ring	TASK		34	JOB	2	TI=723		
32269	TUS	- T	E	END		TASK		34	JOB	2	TI=723		
32269	TUS	T	X	EXECU	PING	TASK		37	JOB	2	TI=725		
32269	TUS	T	E	END		TASK		37	JOB	2	TI=725		
32281	TUS	T	X	EXECU:	ring	TASK		7	JOB		TI=707		
32281	TUS	MS		START	58	TASK		7	JOB	_	TI=707	LENGTH	
				PATH	7000		24		60095			512	120
32281	TUS	MS		START				7			TI=707		RATE
				PATH			1		70001			256	120
32281	TUS	MS		START			_	7			TI=707	LENGTH	RATE
				PATH	7000		2		70004		===	256	120
32283				END		TASK		7	JOB		TI=707		
32283				END		TASK		7			TI=707		
z2283			W	MSG W				7	JOB		TI=707		
32283			Х	EXECU:				6	JOB		TI=706	* 55100011	n i mn
32283	TOR	пъ		START	51	TASK	10	6	JOB 60012	Z	1.T=\00	LENGTH	RATE 120
20202	quire.	M P		PATH	7000		13		= = :	2	T1=706	48	120
32283 32283				END		TASK		6 6	JOB JOB			LENGTH	DATE
34403	109	เขอ		START			10		60018		11-100	72	120
32283	THE	мг		PATH END	7000	TASK	10	6			TI=706		140
32283				START				6		2		LENGTH	RATE
JEEOJ	TÚÐ	1.10		PATH	7000		12	υ	60011		11-100	52	120
				TUIL	1000	-	12		00011			24	120

32283 TUS	M E MS	END	50	TASK		6	JOB	2	TI=706		
32283 TUS	MS	START	52	TASK		6	JOB	2	TI=706	LENGTH	RATE
		PATH	7000	1	12	,	60011	_	mT 706	4	120
32283 TUS	ME	END	52	TASK		6	JOB	2	TI=/Ub	r macomit	23 6 5512
32283 TUS	MS	DAMU	7000	TASK	12	0	40014	4	T1=700	LENGIH	RATE 120
22282 mile	M TZ	LND	7000	ተለረK	13	6	TOR	2	TT=706	30	120
32203 103	MS	START	22	TASK		6	JOB	2	TT=706	TENCTH	RATE
32203 100	110	PATH	7000	1	13	٠	60012	-	11-100	2	120
32283 TUS	ME	END	8	TASK		6	ЈОВ	2	TI=706		
32283 TUS	MS	START	12	TASK		6	JOB	2	TI=706	LENGTH	RATE
		PATH	7000	1	10		60009			12	120
32283 TUS	M E	END	12	TASK		6	JOB	2	TI=706		
32283 TUS	MS	START	14	TASK		6	JOB	2	TI=706	LENGTH	RATE
		PATH	7000	1	11		60010			10	120
32283 TUS	ME	END	14	TASK		6	JOB	2	TI=706		
32283 TUS	MS	START	16	TASK	10	6	JOB	2	TI=706	LENGTH	RATE
22202 11110	M E	PATH	7000	T A C T	12	c	90011	,	mT706	10	120
32283 TUD	n e	ENU	10	TADK		ر 0	TOB	2	T1=700	፣ ውክ ሶምህ	क्र ४ गाए
34403 103	Mo	DVLH	7000	1A5K 1	12	O	60012	4	11-700	TENGIU	I 20
32283 THS	M E	END	18	TASK	13	6	.TOR	2	TT=706		120
32283 TUS	MS	START	24	TASK		6	JOB	2	TI=706	T.ENGTH	RATE
		PATH	7000	1	13	•	60016	_		6	120
32283 TUS	МЕ	END	24	TASK		6	JOB	2	TI=706		
32283 TUS	MS	START	26	TAS		6	JOB	2	TI=706	LENGTH	RATE
		PATH	7000	1	11		60014			2	120
32283 TUS	M E	END	26	TASK		6	JOB	2	TI=706		
32283 TUS	MS	START	- 6	TASK		6	JOB	2	TI=706	LENGTH	RATE
20002		PATH	7000	1	12	_	60011	_	m= 306	12	120
32283 TUS	M E	END	10	TASK		6	JOB	2	TI=/U6	7 PAICTEI	TO A COST
32203 105	MS	DATE	7000	TASK	12	0	2001 1	4	11=706	LENGIA	RATE
32283 THS	ME	END	1000	TASK	12	6	TOR	2	TT=706	4	120
32283 TUS	MS	START	. 20	TASK		6	JOB	2	TT=706	LENGTH	RATE
J55 105		PATH	7000	1	12	_	60011	_		2	120
32283 TUS	ME	END	20	TASK		6	ЈОВ	2	TI=706		
32283 TUS	MS	START	22	TASK		6	JOE	2	TI=706	LENGTH	RATE
	•	PATH	7000	I	12		60015			6	120
32283 TVS	M E	END	22	TASK		6	JOB	2	TI=706		
32283 TUS	MS	START	9	TASK	_	6	JOB	2	TI=706	LENGTH	RATE
		PATH	6001	2	13	_	70001	_		24	120
32283 TUS	ME	END	9	TASK		6	JOB	2	TI=706	* *****	
32283 TUS	MS	START	13	TASK	10	6	JOB	2	TT=\00	LENGTH	RATE
32283 TUS	мв	PATH	12	9 *******	ΤÛ	_	70001 JOB	2	TT-704	32	120
32283 TUS		END START				6 6	JOB				
J2205 100	rio	PATH			11		70001			34	120
32283 TUS	ME	END		TASK		6	JOB				
32283 TUS		START		TASK		6	JOB				RATE
		PATH			12		70001			30	120
32283 TUS	ME	END	17	TASK		б	JOB	2	TI=706		
32283 TUS	MS	START				6	JOB				RATE
		PATH			13		70001	_		14	120
32283 TUS		END				6					
32283 TUS	MS	START		TASK	10	6	JOB	2	T1=706		
27702 min	мъ	PATH			13		70001 JOB			26	120
32283 TUS 32283 TUS		END START				6 6					RATE
TEGO IND	eiu.	PATH			11		70001		+1-100	12	120
		LWTU	0001	-	ΤŢ		10001			14	120

32283 TUS M E	END 27 TASK START 7 TASK	6	JOB	2 TI=706	100
32283 TUS MS	START 7 TASK	6	JOB	2 TI=706	LENGTH RATE
	PATH 60011	12	70001		56 120
32283 TUS M E		6	JOB	2 TI=706	
32283 TUS MS	START 11 TASK	6	JOB	2 TI=706	LENGTH RATE
	PATH 60011		70001		28 120
32283 TUS M E	END 11 TASK	6			
32283 TUS MS	START 21 TASK	6			LENGTH RATE
32283 TUS M E	PATH 60011 END 21 TASK	12 6	70001 JOB		
32283 TUS MS	START 23 TASK	6	JOB JOB		LENGTH RATE
32263 103 H3	PATH 60015		70001		18 120
	END 23 TASK	6	JOB	2 TI=706	
32285 TUS M E	END 58 TASK	7			
	INTERRUPT TASK	6		2 TI=706	
32285 TUS T X	EXECUTING TASK	7	JOB	2 TI=707	
32285 TUS MS	START 28 TASK	7	. –		LENGTH RATE
	PATH 70003	1			
32285 TUS MS	START 29 TASK	7	JOB		LENGTH RATE
	PATH 70001		70003	2 TI=707 2 TI=707	256 120
32287 TUS M E	END 28 TASK END 29 TASK START 25 TASK PATH 70002		JOB	2 11=707	
32287 TUS M E	END 29 TASK				LENGTH RATE
32287 TUS MS	START 25 TASK PATH 70002	, 7	70001		
32287 TUS MS	PATH 70002 START 29 TASK PATH 70001	7			LENGTH RATE
32207 100 NO	PATH 70001	2 '	70002		256 120
32289 TUS M E	END 28 TASK		ЈОВ	2 TI=707	
32289 TUS M E	END 29 TASK	7	JOB	2 TI=707	
32289 TUS T E	END TASK	7	JOB	2 TI=707	
32289 TUS T X	EXECUTING TASK	6		2 TI=706	
32289 TUS MS	START 54 TASK	6	JOB		LENGTH RATE
	PATH 70001	10			72 120
32289 TUS M E	END 54 TASK	6	JOB	2 TI=706	- HANDELL DIME
32289 TUS MS	START 50 TASK	6			LENGTH RATE 52 120
32289 TUS M E	PATH 70001 END 50 TASK	11 6		2 71-706	
	START 52 TASK	6	JOB	2 TT=700	LENGTH RATE
32207 100 110	PATH 70001	11			4 120
32289 TUS M E	,	6		2 TI=706	
	START 53 TASK	6	JOB	2 TI=706	LENGTH RATE
	PATH 70001	12	6001.		36 120
32289 TUS M E	end 53 ľask	6		2 TI=706	
32289 TUS MS	START 26 TASK	6	JOB	2 TI≖706	LENGTH RATE
	PATH 70001	10	60013		2 120
32289 TUS M E	END 26 TASK	6		2 T1=706	T TO A COURT OF A COURT
32289 TUS MS	START 6 TASK	6 11	10B	2 11=706	LENGTH RATE 12 120
32289 TUS M E	PATH 70001 END 6 TASK	6	100	2 TI=706	12 120
32289 TUS MS	START 10 TASK	6		2 TI=706	
32207 100 110	PATH 70001	11		2 12 700	
32289 TUS M E	END 10 TASK	6		2 TI=706	
32289 TUS MS	START 20 TASK	6	JOB		LENGTH RATE
	PATH 70001	11			2 120
32289 TUS M E	END 20 TASK	6		2 TI=706	
32289 TUS MS	START 22 TASK	6		2 TI=706	
	PATH 70001	11	60014		6 120
32289 TUS M E	END 22 TASK	6		2 TI=706	
32289 TUS MS	START 50 TASK	б 10	JOB-		LENGTH RATE
22200 muc N P	PATH 70001		60009	2 T1=706	52 120
32289 TUS M E	END 50 TASK	6	ava	Z 11=100	

32289 TUS MS			JOB			
32289 TUS M E 32289 TUS MS	PATH 70001 END 52 TASK START 53 TASK PATH 70001 END 53 TASK START 27 TASK PATH 60013	10	60009		4	120
32289 TUS M E	end 52 task	6	JOB	2 TI=705		
32289 TUS MS	STARF 53 TASK	6	JOB	2 TI=706	LENGTH	RATE
2 1	PATH 70001	11	60014		36	120
32289 TUS ME 32289 TUS MS	end 53 task	6	JOB	2 TI=706		
32289 TUS MS	START 27 TASK	6	JOB	2 TI=706	LENGTH	RATE
	PATH 60013	10	70001		12	120
32289 TUS M E 32289 TUS MS	end 27 task	6	Job Job	2 TI=706		
32289 TUS MS	START 7 TASK	6	JOB	2 TI=706	LENGTH	
	PATH 60010	11	70001		56	120
32289 TUS M E 32289 TUS MS	END 7 TASK	6		2 TI=706		
32289 TUS MS	START 11 TASK	6	JOB	2 TI=706	LENGTH	
	PATH 60010	11	70001		28	120
32289 TUS M E 32289 TUS MS	END 11 TASK	6		2 TI=706		
32289 TUS MS	START 21 TASK	6	JOB	2 TI=706	LENGTH	
32289 TUS M E 32289 TUS M E 32289 TUS M E 32289 TUS M E 32289 TUS M E	PATH 60010	11	70001		14	120
32289 TUS M E	END 21 TASK	6	JOB	2 TI=706		
32289 TUS MS	START 23 TASK	6	JOB	2 TI=706	LENGTH	
	PATH 60014	11	70001	•	18	120
32289 TUS M E	END 23 TASK	6		2 TI=706		
32289 TUS MS	START 53 TASK	6	JOB	2 TI=706	LENGTH	RATE
	PATH 70001	10	60013		36	120
32289 TUS M E	END 53 TASK	6	JOB	2 TI=706		
32290 TUS MS	START 6 TASK	6	JOB	2 TI=706	LENGTH	RATE
	PATH 70001	10	60009		12	120
32290 TUS M E	END 6 TASK	6	JOB	2 TI=706		
32290 TUS MS	START 10 TASK	6	JOB	2 TI=706	LENGTH	RATE
	PATH 70001	10	60009		2	120
32290 TUS M E	EN7 10 TASK	6	60009 JOB	2 TI=706		
32289 TUS M E 32290 TUS MS 32290 TUS M E 32290 TUS MS 32290 TUS M E 32290 TUS MS 32290 TUS M E 32290 TUS M E 32290 TUS MS	START 20 TASK	6	JOB ·			
	PATH 70001	10	60009		2	120
32290 TUS M E	END 20 TASK	6	60009 ЈОВ	2 TI=706		
32290 TUS MS	START 22 TASK	6	JOB	2 TI=706	LENGTH	RATE
	PATH 70001	10	60013		6	120
32290 TUS M E 32290 TUS MS	END 22 TASK	6	60013 JOB	2 TI=706		
32290 TUS MS	START 7 TASK PATH 60009 END 7 TASK	6	TOR	2 71=706	LUMCTH	PATE
	PATH 60009	10	70001 JOB		56	120
32290 TUS M E	END 7 TASK	6	JOB	2 TI=706		
32290 TUS MS	START 11 TASK	6	JOB	2 TI=706	LENGTH	RATE
5	PATH 60009	10	70001		28	120
32290 TUS M E	END 11 TASK	- 6	JOB	2 TI=706		
32290 TUS MS	START 21 TASK	6	JOB	2 T = 706	LENGTH	RATE
	PATH 60009	10	70001		14	120
32290 TUS M E	END 21 TASK	. 6		2 TI=706	_ ,	
32290 TUS MS	START 23 TASK	6	JOB	2 TI=706	LENGTH	RATE
	PATH 60013	10	70001		· 18	120
32290 TUS M E	END 23 TASK	6		2 TI=706		
32290 TUS T E	END TASK	6	JOB	2 TI=706		
32290 TUS T X	EXECUTING TASK	9	JOB	2 TI=709		
32293 TUS T E	END TASK	ģ	JOB	2 TI=709		
32301 TUS T X	EXECUTING TASK	11	JOB	2 TI=711		
32302 TUS MS	START 32 TASK	ĨĨ	JOB	2 TI=711	LENGTH	RATE
	PATH 70001	24	60095		256	120
32304 TUS M E	END 32 TASK	11	JOB	2 TI=711		
32304 TUS MS	START 33 TASK	11	JOB	2 TI=711	LENGTH	RATE
5-50-F 200 M	PATH 60095	24	70001		256	.20
32304 TUS T W	MSG WAIT TASK	11	JOB	2 TI=711		
32304 TUS T X	EXECUTING TASK	35	JOB	2 TI=724		
32304 TUS MS	START 55 TASK	35	JOB	2 TI=724		RATE
	PATH 70001	6	60001		1024	120

32304	TUS	MS	START	56 7000	TASK 1	7	35	JOB 60002	2	TI=724	LENGTH	RATE 120
32304	TUS	MS ME T I	START	57	TASK	,	35	JOB 60003	2	TI=724	LENGTH 1024	RATE
20206	mma	W D	TATE	7000	MACIZ.	0	т 1	TOP	9	mT711	1024	120
32306	TUS	ME_	END.	33	TASK		Ϋ́Υ	JOB	Z	T1=/11		
32306	ŢUS	TI	INTERB	OPT	TASK		35	JOB	2	T1=/24		
32306	TUS	ΥX	EXECUT	ING	TASK		ΤŢ	JUB	Z	IT=\IT		
32306	TUS	T E	END		TASK		11	JOB		TI=711		
32306	TUS	T X M E	EXECUT	ING	TASK		35	JOB		TI=724		
32312	TUS	M E	END	55	TASK		35	JOB	2	TI=724		
32312	TUS	ME	END	56	TASK		35	JOB	2	TI=724		
32312	TUS	ΜE	END	57	TASK		35		2	TI=724		
32316	TUS	ME ME TE	END		TASK		35	JOB	2	TI=724		
32321	THE	T X	EXECUT	TNG	TASK		7	JOB	2	TI=:707		
32321	TUS	MS	START	58	TASK		7	JOB				RATE
J4J41	100	*10	PATH	7000	1	24	•	60005	_	,,,	512	120
22221	TITE	MS	START	28	ጥለር _ነ	24	7	60095 JOB 70001 JOB 70004	2	TT-707	י דאכייים	RATE
JEJEI	TÓD	HO	DAMI	7000	TUON	1	′	70001	~	11-707	DEMOTIL	120
20201	m	100	PATH START PATH	7000	4 m.s.are	T	7	70001	2		400 T THEOREM	120
32321	TUS	MS	START	29	TASK		,	JOB	Z	TIE/U/	LENGTH	KAIL
			PATH	7000	T	2	_	70004	_		256	120
32323	TUS		END	28			7		2	TI=707		
		M E	END	29	TASK		7			TI=707		
32323	TUS	T W	MSG WA	II	TASK		7	JOB		TI=707		
32323	TUS	тX	EXECUT	ING	TASK		6	JOB	2	TI=706		
32323	TUS	MS	START	51	TASK		6	JOB	2	TI=706	LENGTH	RATE
			PATH	7000	1	13		60012				120
32323	TUS	M E	END	51	TASK		6	JOB	2	TI=706		
32323	TUS	MS	START	54	TASK		6	JOB				RATE
		MS	PATH	7000	1	10		60018				
32323	TUS	M E	END	54	TASK		6		2	TI=706		
32323	TUS	MS	START	50	TASK		_	JOB				RATE
0-0-0		MS	PATH	7000			-	60011				120
32323	TIIC	M E	EMD		TASK		6					
32323				52	TASK		6	JOB			LENGTH	PATE
JEJEJ	100	FID	START PATH					60011				
22272	mnc	M E	EWIL	7000	111 Y C-12	12	6	JOB	2	TT-706	4	120
22222	105	M E	CMADM				_					n Ame
34343	TUS	MS	START	53		• •	D					120
20000		M E	PATH	7000	1	13	_	60016				120
32323	TUS	ME	END	53	TASK		6					- 4 6544
32323	TUS	MS	START	- 8	TASK		6					
			PATH	7000	1	13	_	60012	_		2	120
32323	TUS	ME	END	8	TASK			JOB				
32323	TUS	MS M E MS	START	12			6					
			PATH	7000	1			60009				120
32323	TUS	M E	END START	12	TASK		6	JOB	2	TI=706		
32323	TUS	MS	START	14	TASK		6	JOB	2	TI=706	LENGTH	RATE
			PATH	7000	1	11		60010			10	120
32323	TUS	ME	END	14	TASK		6	JOB	2	TI=706		
32323			START		TASK		б	JOB	2	TI=706	LENGTH	RATE
				7000				60011			10	120
32323	TUS	M E	END			·	6	JOB	2	TI=706		
		MS	START				6		2	TI=706	LENGTH	RATE
u	~		PATH	7000		13		60012		,	2	120
32323	פוויןי	ме	END		TASK	1.3	6	IOR	2	TT=706		
32323			START				6		2	TT=704	LENCTH	TATE
J. J. J. J	100		PATH		1	1 2		60016				120
20202	TITE	ме					£	200010	ว	77-706	Ü	
			END				0	JOB JOB	2	#T-700	T TOMOURIE	erm v.c.
32323	Thg	tag.	START							TT±4\00		
			PATH	7000	1	11		60014			2	120

32323 TUS M E 32323 TUS MS	END 26 TASK	б	JOB	2 TI=706	
32323 TUS MS	start 6 task	6	JOB	2 TI=706 I	LENGTH RATE
	PATH 70001	12	60011		12 120
32323 TUS M E	END 6 TASK	6	JOB	2 TI=706	
32323 TUS MS	Start 10 task	6	JOB	2 TI=706 I	LENGTH RATE
	PATH 70001	12	60011		2 120
32323 TUS M E	end 10 task	6	JOB	2 TI=706	
32323 TUS MS	START 20 TASK	6	JOB	2 TI=706 I	LENGTH RATE
32323 TUS M E 32323 TUS MS	PATH 70001	12	60011	0 mt 70/	2 120
32323 TU5 M E	END 20 TASK	6	JOB	2 T1=/06	DAME DAME
32323 TUS MS	START ZZ TASK	7.0	JUB C001E	2 T1=706 I	ENGIH KATE
20702 mile M E	PATH /UUUI	12	TOD GTOTO	2 97-706	0 120
32323 TUS M E 32323 TUS MS	END 22 INCL. COLOR O TASK	6	TOB	2 II-700 2 TT=706 T	CENCTH PATE
32323 108 MS	DIAKI 9 IADK	13	70001	2 11-700 1	74 120
32323 TUS M E 32323 TUS MS	END 9 TASK	- 6	.TOB	2 TT=706	24 140
32323 TUS MS	START 13 TASK	6	JOB	2 TI=706 I	ENGTH RATE
52545 202 45	PATH 60009	10	70001		32 120
32323 TUS M E	END 13 TASK	6	JOB	2 TI=706	
32323 TUS MS	START 15 TASK	6	JOB	2 TT=706 I	LENGTH RATE
	PATH 60010	11	70001		34 120
32323 TUS M E	END 15 TASK	6	JOB	2 TI=706	34 120
32323 TUS MS	START 17 TASK	6	JOB	2 TI=706 I	LENGTH RATE
	PATH 60011 END 17 TASK	12	70001		30 120
32323 TUS M E	END 17 TASK	6	JOB	2 TI=706	
32323 TUS M E 32323 TUS MS	START 19 TASK	6			LENGTH RATE
	סוחה בחוס	13	70001		14 120
32323 TUS M E	END 19 TASK	6	JOB	2 TI=706	
32323 TUS MS	START 25 TASK	. 6	JOB	2 T1=/06 1	LENGTH RATE
22222 mus M B	PATH OUU16	13	70001	0 57706	26 120
32323 TUS M E	END 23 TABE	0	TOR	2 DT-704 T	שיייא מו דוייייטוגים
32323 TUS PIS	DAMU 40014	11	3000 a	2 11-700 1	12 120 12 120
32323 TUS M E 32323 TUS MS 32323 TUS M E 32323 TUS M E	FMD 97 TACK	11 K	70001 TOR	2 TT=706	12 120
32323 TUS MS	START . 7 TASK	6	JOB	2 TI=706 I	ENGTH RATE
543-3 200 H	PATH 60011	12	70001	2 12 ,00 .	56 120
32323 TUS M E	END 7 TASK	- 6	ЈОВ	2 TI=706	
32323 TUS MS	START 11 TASK	6	JOB	2 TI=706 I	LENGTH RATE
	PATH 60011	12	70001		28 120
32323 TUS M E 32323 TUS M E 32323 TUS M E 32323 TUS M E	END 11 TASK	6	JOB	2 TI=706	
32323 TUS MS	START 21 TASK	6	JOB	2 TI=706 I	LENGTH RATE
	PATH 60011	12	70001		14 120
32323 TUS M E	END 21 TASK	6	JOB	2 TI=706	
32323 TUS MS	START 23 TASK	6	JOR	2 T1=/06 I	LENGTH RATE
	PATH 60015	12	70001		18 120
32323 TUS M E	END 23 TASK		JOB	2 TI=706	
32325 TUS M E	END 58 TASK	7		2 TI=707	
	INTERRUPT TASK	6		2 TI=706	
32325 TUS T X	EXECUTING TASK START 28 TASK	7 7	JOB JOB	2 TI=707 2 TI=707 I	LENGTH RATE
32325 TUS MS	START 28 TASK PATH 70003	1 '	70001		256 120
32325 TUS MS	START 29 TASK	⁺ 7	JOB	2 TI=707 I	
THOMA TOO THE	PATH 70001	2 .			256 120
32327 TUS M E	END 28 TASK	7		2 TI=707	
32327 TUS M E	END 29 TASK	7			
32327 TUS MS	START 28 TASK	7		2 TI=707 1	LENGTH RATE
	PATH 70002	1	70001		256 120
32327 TUS MS	START 29 TASK	7		2 TI=707 I	
	PATH 70001	2	70002		256 120
32329 TUS M E	END 28 TASK	7	JOB	2 TI=707	

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32329 TUS M E 32329 TUS T E 32329 TUS T X 32331 TUS MS 32331 TUS M E					
32329 TUS M E	END 29 TASK	7	JOB	2 TI=707	
32329 TUS T E	END TACK EVECTORING TACK	, 6	TOR	2 II-707 2 TT=706	
32329 TUB T X	EVECUITING INDIC	6	TOR	2 TI-700 2 TT=706 I	ENGTH PATE
)2331 103 MS	PATH 70001	10	60017	2 12 ,00 .	72 120
32331 THE M E	END 54 TASK	6	JOB	2 TI=706	, = -20
32331 TUS MS	START 50 TASK	6	JOB	2 TI=706 1	LENGTH RATE
32331 100 110	PATH 70001	11	60010		52 120
32331 TUS M E	50 TASK	6	JOB	2 TI=706	
32331 TUS MS	T 52 TASK	6	JOB	2 TI=706 1	LENGTH RATE
	70001	11	60010		4 120
32331 TUS M E	EL 52 TASK	6	JOB	2 TI=706	
32331 TUS MS	START 53 TASK	6	JOB	2 TI=706 B	LENGTH RATE
	PATH 70001	12	60015		36 120
32331 TUS M E	END 53 TASK	6	JOB	2 TI=706	
32331 TUS MS	START 26 TASK	6	JOB	2 TI=706 1	LENGTH RATE
	PATH 70001	10	60013	a mt 30/	2 120
32331 TUS M E	END 26 TASK	6	JOR	2 T1=/06	rayamu alma
32331 TUS MS	START 6 TASK	11	70R	2 TI=/06 I	LENGTH RATE
22221 2772 14 22	PATH /UUUI	11	60010	2 FT-706	12 120
32331 TUS M E	ርጥለውም 10 ጥለፍ ሃ	6	JOB	2 11-706 2 TT-706 1	FMCTH PATE
32331 105 165	DAME TO IASK	11	60010	2 11-700 1	2 120
27221 THE M F	END 10 TASK	- 6	TOR	2 TT=706	2 120
32331 THS MS	START 20 TASK	6	JOB	2 TI=706 I	LENGTH RATE
J2J31 100 NO	PATH 70001	11	60010	_ 11 100 .	2 120
32331 TUS M E	END 20 TASK	6	ЈОВ	2 TI=706	
32331 TUS MS	START 22 TASK	6	JOB	2 TI=706	LENGTH RATE
	PATH 70001	11	60014		6 120
32331 TUS M E	end 22 Task	6	JOB	2 TI=706	
32331 TUS MS	START 50 TASK	6	JOB	2 TI=706 I	LENGTH RATE
	PATH 70001	10	00009		52 120
32331 TUS M E	end 50 task	6	JU3	2 TI=706	
32331 TUS MS	START 52 TASK	6	JOB	2 TI=706	LENGTH RATE
	PATH 70001	10	60009	a == ===	4 120
32331 TUS M E	END 52 TASK	6	JOB	2 T1=706	TENOMII DAME
32331 TUS MS	START 53 TASK	7.1	JUB 60014	2 11=706	LENGIR KAIE
22221 muc M P	PAIR /UUUI	11	100	2 TT=706	30 120
32331 105 M 6	באט ככ שאם כל מאם	6	JOE .	2 TT=706	LENGTH RATE
32331 103 M3	PATH 60013	10	70001	2 11 700	12 120
32331 THS M E	END 27 TASK	6	JOB	2 TI=706	
32331 TUS MS	START 7 TASK	6	JOB	2 TI=706	LENGTH RATE
	PATH 60010	11	70001		56 120
32331 TUS M E	end 7 task	6	JOB	2 TI=706	
32331 TUS MS	START 11 TASK	6	JOB	2 TI=706	LENGTH RATE
32331 TUS MS	PATH 60010	11	70001		28 120
32331 TUS M E	END 11 TASK	6	JOB	2 TI=706	LENGTH RATE
32331 TUS MS	START 21 TASK PATH 60010	6	JOB	2 TI=706	LENGTH RATE
	PATH 60010		70001		14 120
32331 TUS M E	END 21 TASK	6		2 T1=/06	· CHOMU DAME
32331 TUS MS		1, 6			LENGTH RATE 18 120
22221 muc u E	PATH 60014	11	70001	2 TI=706	10 120
32331 TUS M E	END 23 TASK	6	TOD	2 11-700	LENGTH RATE
32331 TUS MS	DIAKI DO TASK	10	60013		
32331 TUS M E	END 23 TACK	10 6	ROI.	2 TI=706	50 120
32332 TUS MS	END 23 TASK START 53 TASK PATH 70001 END 53 TASK START 6 TASK PATH 70001	6	JOB	2 TI=706	LENGTH RATE
, 100 Fig	PATH 70001		60009		12 120
32332 TUS M E	******		JOB	2 TI=706	
	0 211010	•		-	

32332 TUS MS	START 10 TASK	6	JOB	2 TI=706 LENGTH	RATE
32532 105 115	PATH 70001		60009	2	120
32332 TUS M E	END 10 TASK	6	JOB	2 TI=706	
	START 20 TASK	6	JOB	2 TI=706 LENGTH	RATE
3.332 232	PATH 70001				
32332 TUS M E	END 20 TASK	6	JOB	2 2 TI=706	
32332 TUS M E 32332 TUS MS	START 22 TASK	6	JOB	2 TI=706 LENGTH	RATE
	PATH 70001	10		6	120
32332 TUS M E	END 22 TASK	6	JOB	2 TI=706	
32332 TUS M E 32332 TUS MS	START 7 TASK	6	JOB	2 TI=706 LENGTH	RATE
7-00- 100	PATH 60009	10		56	120
32332 TUS M E	END 7 TASK	6	JOB	2 TI=706	
32332 TUS MS	START 11 TASK	6	JOB	2 TI=706 LENGTH	RATE
	PATH 60009	10	70001		120
32332 TUS M E		6	JOB	2 TI=706	
32332 TUS MS	END 11 TASK START 21 TASK	6	JOB	2 TI=706 2 TI=706 LENGTH	RATE
	PATH 60009	10	70001	14	120
32332 TUS M E	END 21 TASK	6	ЈОВ	2 TI=706	
32332 TUS M5	END 21 TASK START 23 TASK PATH 60013	6	JOB	2 TI=706 2 TI=706 LENGTH	RATE
3-03: 100 111	PATH 60013		70001	18	120
32332 TUS M E	END 23 TASK	6	JOB	18 2 TI=706 2 TI=706	
32332 TUS T E	END TASK	6	JOB	2 TI=706	
32332 TUS T X	EXECUTING TASK	9	JOB	2 TI=709	
32334 TUS T E	END TASK	9	JOB	2 TI=709	
32334 TUS T X	EXECUTING TASK	10	JOB	2 TI=710	
32345 TUS T E	END TAJK	10	JOB	2 TI=710	
32345 TUS T X	EXECUTING TASK	19	JOB	2 TI=716	
	INTERRUPT TASK	19	JOB	2 TI=716	
32350 TUS T X	EXECUTING TASK	13	JOB	2 TI=713	
32350 TUS T X	EXECUTING TASK	14	JOB	2 TI=714	
32350 TU3 T E	END TASK	13	JOB	2 TI=713	
32350 TUS T E	END TASK	+4	JOB	2 TI=714	
32350 TUS T X	EXECUTING TASK	34	• ОВ	2 TI=723	
32350 TUS MS	START 59 TASK	3:	J OB	2 TI=723 LENGTH	RATE
	PATH 60027	O.	70001	10	1
32351 TUS T I	INTERRUPT TASK	3.4	JOB	2 TI=723	
32351 TUS T X	EXECUTING TASK	! 1	IOB	2 TT=711	
32352 TUS MS	START 32 TASK	1 i	OB	2 TI=711 LENGTH	RATE
	PATH 70001	24	60095	256	120
32354 TUS M E	END 32 TASK	1	JOB	2 TI=711	
32354 TUS M E 32354 TUS MS	START 33 TASK	11		2 TI=711 LENGTH	RATE
	PATH 60095	24	70001	256	120
32354 TUS T W	MSG WAIT TASK	11	JOB	2 TI=711	
32354 TUS T X	EXECUTING TASK	34	JOB	2 TI=723	
32355 TUS T W	MSG WAIT TASK	34	JOB	2 TI=723	
32355 TUS T X	EXECUTING TASK	19	JOB	2 TI=716	
32356 TUS M E	end 33 task	11	JOB	2 TI=711	
32356 TUS T I	INTERRUPT TASK	19	JOB	2 TI=716	
32356 TUS T X	EXECUTING TASK	11	JOB	2 TI=711	
32356 TUS T E	END TASK	11	JOB	2 TI=711	
32356 TUS T X	EXECUTING TASK	19	JOB	2 TI=716	
32358 TUS T E	END TASK	19	JOB	2 TI=716	
32360 TUS M E	end 59 task	34	JOB	2 TI=723	
32360 TUS T X	EXECUTING TASK	34	JOB	2 TI=723	
32360 TUS T E	end task	34	JOB	2 TI=723	
32361 TUS T X	EXECUTING TASK	7	JOB	2 TI=707	
32361 TUS MS	START 58 TASK	7	JOB	2 TI=707 LENGTH	RATE
	PATH 70001	24	60095	512	120
32361 TUS MS	START 28 TASK	. 7	JOB	2 TI=707 LENGTH	RATE
	PATH 70004	1	70001	256	120

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32361	TUS	MS		START	29	TASK		7	JOB	2	TI=707	LENGTH	RATE
				PATH	7000	1	2		70004			256	120
32363	TUS	ME		END	28	TASK		7	JOB	2	TI=707		
32363	TUS	ME		END	29	TASK		7	JOB	2	TI=707		
32364	TUS	\mathbf{r}	W	MSG WA	IT	TASK		7	JOB	2	TI=707		
32364	TUS	T	X	EXECUT	ING	TASK		6	JOB	2	TI=706		
32364	TUS	MS		START	51	TASK		6	JOB	2	TI=706	LENGTH	RATE
				PATH	7000	1	13		60012			48	120
32364	TUS	ME		END	51	TASK		6	JOB	2	TI=706		
32364	TUS	MS		START	54	TASK		6	JOB	2	TI=706	LENGTH	RATE
				PATH	7000	1	10		60018			72	120
32364	TUS	ME		END	54	TASK		6	JOB	2	TI=706		
32364	TUS	MS		START	50	TASK		6	JOB	2	TI=706	LENGTH	RATE
				PATH	7000	1	12		60011			52	120
32364	TUS	ΜE		END	50	TASK		6	JOB	2	TI=706		
32364	TUS	MS		START	52	TASK		6	JOB	2	TI=706	LENGTH	RATE
				PATH	7000	1	12		60011			4	120
32364	TUS	ΜE		END	52	TASK		6	JOB	2	TI=706		
32364	TUS	MS		START	53	TASK		6	JOB	2	TI=706	LENGTH	RATE
				PATH	7000	1	13		60016			36	120
32364	TUS	МE		END	53	TASK		6	JOB	2	TI=706		
32364	TUS	MS		START	8	TASK		6	JOB	2	TI=706	LENGTH	RATE
				PATH	7000	1	13	_	60012	_		2	120
32364	TUS	ME		END	8	TASK		6	JOB	2	TI=706		
32364	TUS	MS		START	12	TASK		6	JOB	2	TI=706	LENGTH	RATE
				PATH	7000	1	10	_	60009	_	==	12	120
32364	TUS	ME		END	12	TASK		6	JOB	2	TI=706		
32364	TUS	MS		START	14	TASK		6	JOB	2	T1=/06	LENGTH	RATE
00061				PATH	7000	T	11	_	60010	_	mr 704	10	120
32364	TUS	ME		END	14	TASK		6	JOB	2	T1=/06	* 1311/0717	D 4 (D)
32364	TUS	MS		START	10	TASK		þ	JOR	2	TT=100	LENGTH	RATE
22261	mric	W 17		PATH	7000		12	_	60011	•	mT_706	10	120
22264	TUD	ME		END	10	TASK		0	JOB	2	TI=700	т высти	ተነ ለጥሮ
32304	103	בויו		DYDD	7000	TASK	12	Ō	60013	2	17-100	TENGIU	LAIL
22264	THE	мг		LWID	1000		13		10B 00017	2	TT-706	4	120
22264	TUS	MC		CALV DATE	3.v TO	TASK		6	10p	2	TI=706	T PMOTU	מייא נו
34304	103	uz		DYARI	7000	INDK	12	0	40016	4	11-700	FEMGIU	120
22364	THE	мг		LWIN	7000	ውለሮፓ T	13	4	TOP	ว	TT-706	Ų	120
32364	THE	MC		CTADT	26	TAGE		6	105 207	2	TI=700	T RMCTH	PATE
J&JU4	100	HO		DATE	7000	1 MOK	11	U	60014	_	11-700	7	120
32364	THE	мг		FND	26	TACK	11	6	TOR	2	TT=706	_	220
32364	THE	MS		START	20 6	TASK		6	TOB	2	TI=706	TENCTH	RATE
J2J07	100	110		PATH	7000	1	12	U	60011	-	11-700	12	120
32364	THS	ΜE		END	7000	TASK	12	6	TOR	2	TI=706		
32364	THS	MS		END START	10	TASK		6	JOB JOB	2	TT=706	LENGTH	RATE
32304	100			PATH	7000	1	12	Ū	60011	_	11-,00	2	120
32364	THS	ME			10	TASK		6	.IOR	2	TT=706	_	
32364 32364	TUS	MS		START	20	TASK TASK		6	JOB JOB	2	TT=706	LENGTH	RATE
J,					7000		12	٠	60011			2	120
32364	TUS	мЕ		END		TASK		6	JOB	2	TI=706		0
32364	TUS	MS		START				6	JOB JOB	2	TI=706	LENGTH	RATE
•				PATH	7000	1	12	_	60015				120
32364	TUS	ΜE		END START	22	TASK				2	TI=706	-	
32364 32364	TUS	MS		START	9			6	JOB JOB	2	TI=706	LENGTH	RATE
				PATH	6001	2	13		70001			24	120
32364 32364	TUS	ΜE		END	9	TASK		6	JOB JOB	2	TI=706		
32364	TUS	MS -		START	13	TASK		6	JOB	2	TI=706	LENGTH	RATE
				PATH					70001			32	120

32364 TUS M E	END 13 TASK	6	JOB	2 TI=706		
32364 TUS M E 32364 TUS M E 32364 TUS MS	START 15 TASK	6	JOB	2 TI=706	LENGTH	RATE
	PATH 60010	11	70001		34	120
32364 TUS M E	END 15 TASK	6	JOB	2 TI=706		
32364 TUS MS	START 17 TASK	6	JOB	2 TI=706	LENGTH	RATE
	PATH 60011	12	70001 JOB		30	120
32364 TUS M E	end 17 task	6				
32364 TUS MS	START 19 TASK	6	JOB			
	PATH 60012	13	70001 JOB		14	120
32364 TUS M E 32364 TUS MS	end 19 task	6	JOB	2 TI=706		
32364 TUS MS	START 25 TASK	. 6	JOB	2 TI=706	LENGTH	
	PATH 60016	13	70001		26	120
32364 TUS M E 32364 TUS MS	END 25 TASK	6	JOB	2 TI=706		Ta 1 100.00
32364 TUS MS	START 27 TASK	- 6	JOB	2 TI=706	LENGTH	RATE
	PATH 60014	11	70001 JOB JOB		12	120
32364 TUS M E	END 27 TASK	6	JOB	2 T1=706		F- 1 (T)+5
32364 TUS MS	START 7 TASK	. 6	JOB	2 T1=/06	LENGTH	RATE
	PATH 60011	12	/0001	5 mz 704	56	120
32364 TUS M E 32364 TUS M E	END 7 TASK	6	TOR	2 T1=706		n.l.mn
32364 TUS MS	START 11 TASK	. 6	JOB	2 T1=706	LENGTH	KATE
	PATH 60011	12	10001	2 mt 70/	28	120
32364 TOS M E	END II TASK	0	JOB	2 TI=/U6	r Palemii	TO A COST
32364 TUS MS	START 21 TASK	יט	30001	2 11=/00	LENGIA	KALE
222/ mire M P	PAIR DUULL	14	1000	2 TT706	14	120
32364 TUS M E 32364 TUS M E 32365 TUS M E	END 21 LASK	D	JOB JOB	2 11-700	I ENCTU	DATE
32364 Tub Mb	DARI 60 IMOR	17	70001	2 11-700	LENGIN	120
22264 THE M E	ADVA EC UNA LWIU OUOTY	12	70001 JOB JOB	2 TT=706	10	120
22364 TOO M E	END SS TASK	7	TOB	2 TI=700		
32365 TUS T I	INTERBIIPT TASK	6	JOB	2 TI=706		
32365 THE TY	EXECUTING TASK	7	TOR	2 TI=707		
32365 TUS T X 32365 TUS MS	START 28 TASK	7	JOB JOB	2 TI=707	LENGTH	RATE
32303 100 1.0	PATH 70003	τ΄	70001	2 12 707	256	120
32365 THS MS	START 29 TASK	7	JOB	2 TI=707	LENGTH	
32303 100 110	PATH 70001	າ ້	70003		256	
		- /-				
32367 THS M E	END 28 TASK	7	JOB	2 TI=707		
32365 TUS MS 32367 TUS M E 32367 TUS M E	END 28 TASK END 29 TASK	2 7 7	JOB JOB	2 TI=707 2 TI=707		
32367 TUS M E	END 29 TASK START 28 TASK	7	JOB	2 TI=707 2 TI=707	I.ENGTH	RATE
32367 TUS M E	END 29 TASK START 28 TASK	7	JOB	2 TI=707 2 TI=707	I.ENGTH	RATE 120
32367 TUS M E	END 29 TASK START 28 TASK	7	JOB	2 TI=707 2 TI=707	I.ENGTH	RATE 120 RATE
32367 TUS M E	END 29 TASK START 28 TASK	7	JOB	2 TI=707 2 TI=707	I.ENGTH	RATE 120 RATE 120
32367 TUS M E	END 29 TASK START 28 TASK	7	JOB	2 TI=707 2 TI=707	I.ENGTH	RATE 120 RATE 120
32367 TUS M E	END 29 TASK START 28 TASK	7	JOB	2 TI=707 2 TI=707	I.ENGTH	RATE 120 RATE 120
32367 TUS M E 32367 TUS MS 32367 TUS MS 32369 TUS M E 32369 TUS M E 32369 TUS T E	END 29 TASK START 28 TASK PATH 70002 START 29 TASK PATH 70001 END 28 TASK END 29 TASK END TASK	7 7 1 7 2 7 7	JOB JOB 70001 JOB 70002 JOB JOB JOB	2 TI=707 2 TI=707 2 TI=707 2 TI=707 2 TI=707 2 TI=707	LENGTH 256 LENGTH 256	RATE 120 RATE 120
32367 TUS M E 32367 TUS MS 32367 TUS MS 32369 TUS M E 32369 TUS M E 32369 TUS T E	END 29 TASK START 28 TASK PATH 70002 START 29 TASK PATH 70001 END 28 TASK END 29 TASK END TASK EXECUTING TASK	7 7 1 7 2 7 7	JOB	2 TI=707 2 TI=707 2 TI=707 2 TI=707 2 TI=707 2 TI=707	LENGTH 256 LENGTH 256	RATE 120 RATE 120
32367 TUS M E 32367 TUS MS 32367 TUS MS 32369 TUS M E 32369 TUS M E 32369 TUS T E	END 29 TASK START 28 TASK PATH 70002 START 29 TASK PATH 70001 END 28 TASK END 29 TASK END TASK EXECUTING TASK START 54 TASK	7 7 1 7 2 7 7 7 6 6	JOB JOB 70001 JOB JOB JOB JOB JOB JOB	2 TI=707 2 TI=707 2 TI=707 2 TI=707 2 TI=707 2 TI=707 2 TI=706 2 TI=706	LENGTH 256 LENGTH 256 LENGTH	120 RATE 120
32367 TUS M E 32367 TUS MS 32367 TUS MS 32369 TUS M E 32369 TUS M E 32369 TUS T E 32369 TUS T X	END 29 TASK START 28 TASK PATH 70002 START 29 TASK PATH 70001 END 28 TASK END 29 TASK END TASK EXECUTING TASK	7 7 1 7 2 7 7 7 6 6	JOB JOB 70001 JOB 70002 JOB JOB JOB JOB JOB	2 TI=707 2 TI=707 2 TI=707 2 TI=707 2 TI=707 2 TI=707 2 TI=706	LENGTH 256 LENGTH 256 LENGTH 72	120 RATE 120
32367 TUS M E 32367 TUS MS 32367 TUS MS 32369 TUS M E 32369 TUS M E 32369 TUS T E 32369 TUS T X	END 29 TASK START 28 TASK PATH 70002 START 29 TASK PATH 70001 END 28 TASK END 29 TASK END TASK EXECUTING TASK START 54 TASK	7 7 1 7 2 7 7 7 6 6	JOB JOB 70001 JOB JOB JOB JOB JOB JOB JOB JOB	2 TI=707 2 TI=707 2 TI=707 2 TI=707 2 TI=707 2 TI=706 2 TI=706 2 TI=706	LENGTH 256 LENGTH 256 LENGTH 72	120 RATE 120 RATE 120
32367 TUS M E 32367 TUS MS 32367 TUS MS 32369 TUS M E 32369 TUS M E 32369 TUS T E 32369 TUS T X 32370 TUS MS	END 29 TASK START 28 TASK PATH 70002 START 29 TASK PATH 70001 END 28 TASK END 29 TASK END TASK END TASK EXECUTING TASK START 54 TASK PATH 70001	7 7 7 1 7 2 7 7 7 6 6 6 10	JOB JOB 70001 JOB JOB JOB JOB JOB JOB JOB JOB	2 TI=707 2 TI=707 2 TI=707 2 TI=707 2 TI=707 2 TI=707 2 TI=706	LENGTH 256 LENGTH 256 LENGTH 72	120 RATE 120 RATE 120
32367 TUS M E 32367 TUS MS 32367 TUS MS 32369 TUS M E 32369 TUS M E 32369 TUS M E 32369 TUS T E 32369 TUS T X 32370 TUS MS 32370 TUS M E 32370 TUS M E	END 29 TASK START 28 TASK PATH 70002 START 29 TASK PATH 70001 END 28 TASK END 29 TASK END TASK EXECUTING TASK START 54 TASK PATH 70001 END 54 TASK START 50 TASK START 50 TASK PATH 70001	7 7 7 1 7 2 7 7 6 6 6 10 6 6 11	JOB JOB 70001 JOB 70002 JOB JOB JOB 60017 JOB JOB	2 TI=707 2 TI=707 2 TI=707 2 TI=707 2 TI=707 2 TI=706 2 TI=706 2 TI=706 2 TI=706	LENGTH 256 LENGTH 256 LENGTH 72 LENGTH 52	120 RATE 120 RATE 120
32367 TUS M E 32367 TUS MS 32367 TUS MS 32369 TUS M E 32369 TUS M E 32369 TUS M E 32369 TUS T E 32369 TUS T X 32370 TUS MS 32370 TUS M E 32370 TUS M E 32370 TUS M E	END 29 TASK START 28 TASK PATH 70002 START 29 TASK PATH 70001 END 28 TASK END 29 TASK END TASK EXECUTING TASK START 54 TASK PATH 70001 END 54 TASK START 50 TASK START 50 TASK PATH 70001 END 50 TASK	7 7 7 7 2 7 7 7 6 6 6 10 6 6 11 6	JOB JOB 70001 JOB JOB JOB JOB JOB 60017 JOB JOB 60010 JOB	2 TI=707 2 TI=707 2 TI=707 2 TI=707 2 TI=707 2 TI=706 2 TI=706 2 TI=706 2 TI=706 2 TI=706	LENGTH 256 LENGTH 256 LENGTH 72 LENGTH 52	120 RATE 120 RATE 120 RATE 120
32367 TUS M E 32367 TUS MS 32367 TUS MS 32369 TUS M E 32369 TUS M E 32369 TUS M E 32369 TUS T E 32369 TUS T X 32370 TUS MS 32370 TUS M E 32370 TUS M E	END 29 TASK START 28 TASK PATH 70002 START 29 TASK PATH 70001 END 28 TASK END 29 TASK END TASK EXECUTING TASK START 54 TASK PATH 70001 END 54 TASK START 50 TASK START 50 TASK PATH 70001 END 54 TASK START 50 TASK	7 7 7 7 7 7 7 6 6 6 10 6 6 11 6 6	JOB JOB 70001 JOB 70002 JOB JOB JOB 60017 JOB JOB JOB JOB	2 TI=707 2 TI=707 2 TI=707 2 TI=707 2 TI=707 2 TI=706 2 TI=706 2 TI=706 2 TI=706 2 TI=706 2 TI=706	LENGTH 256 LENGTH 256 LENGTH 72 LENGTH 52 LENGTH	120 RATE 120 RATE 120 RATE 120 RATE
32367 TUS M E 32367 TUS MS 32367 TUS MS 32369 TUS M E 32369 TUS M E 32369 TUS M E 32369 TUS T E 32369 TUS T X 32370 TUS MS 32370 TUS M E 32370 TUS M E 32370 TUS M E 32370 TUS M E	END 29 TASK START 28 TASK PATH 70002 START 29 TASK PATH 70001 END 28 TASK END 29 TASK END TASK EXECUTING TASK START 54 TASK PATH 70001 END 54 TASK START 50 TASK START 70001	7 7 7 7 7 7 7 7 6 6 6 10 6 6 11 6 6 11	JOB JOB 70001 JOB JOB JOB JOB 60017 JOB 60010 JOB JOB 60010	2 TI=707 2 TI=707 2 TI=707 2 TI=707 2 TI=707 2 TI=706 2 TI=706 2 TI=706 2 TI=706 2 TI=706 2 TI=706	LENGTH 256 LENGTH 256 LENGTH 72 LENGTH 52 LENGTH 4	120 RATE 120 RATE 120 RATE 120
32367 TUS M E 32367 TUS MS 32367 TUS MS 32369 TUS M E 32369 TUS M E 32369 TUS M E 32369 TUS T X 32370 TUS MS 32370 TUS M E	END 29 TASK START 28 TASK PATH 70002 START 29 TASK PATH 70001 END 28 TASK END 29 TASK END TASK EXECUTING TASK START 54 TASK PATH 70001 END 54 TASK START 50 TASK START 52 TASK PATH 70001 END 52 TASK	7 7 7 7 7 7 7 7 6 6 6 10 6 6 11 6 6 11 6	JOB JOB 70001 JOB JOB JOB JOB 60017 JOB 60010 JOB JOB JOB	2 TI=707 2 TI=707 2 TI=707 2 TI=707 2 TI=707 2 TI=706 2 TI=706 2 TI=706 2 TI=706 2 TI=706 2 TI=706	LENGTH 256 LENGTH 256 LENGTH 72 LENGTH 52 LENGTH 4	120 RATE 120 RATE 120 RATE 120 RATE 120
32367 TUS M E 32367 TUS MS 32367 TUS MS 32369 TUS M E 32369 TUS M E 32369 TUS M E 32369 TUS T X 32370 TUS MS 32370 TUS M E	END 29 TASK START 28 TASK PATH 70002 START 29 TASK PATH 70001 END 28 TASK END 29 TASK END TASK EXECUTING TASK START 54 TASK PATH 70001 END 54 TASK START 50 TASK PATH 70001 END 50 TASK START 52 TASK PATH 70001 END 50 TASK START 52 TASK PATH 70001 END 50 TASK START 52 TASK PATH 70001 END 52 TASK START 53 TASK	7 7 7 7 2 7 7 6 6 10 6 11 6 6 11 6 6	JOB JOB 70001 JOB 70002 JOB JOB JOB JOB 60017 JOB 60010 JOB JOB 60010 JOB JOB JOB	2 TI=707 2 TI=707 2 TI=707 2 TI=707 2 TI=707 2 TI=706 2 TI=706 2 TI=706 2 TI=706 2 TI=706 2 TI=706 2 TI=706 2 TI=706	LENGTH 256 LENGTH 256 LENGTH 72 LENGTH 52 LENGTH 4	RATE 120
32367 TUS M E 32367 TUS MS 32367 TUS MS 32369 TUS M E 32369 TUS M E 32369 TUS T E 32369 TUS T X 32370 TUS MS 32370 TUS M E	END 29 TASK START 28 TASK PATH 70002 START 29 TASK PATH 70001 END 28 TASK END 29 TASK END TASK EXECUTING TASK START 54 TASK PATH 70001 END 54 TASK START 50 TASK START 52 TASK PATH 70001 END 52 TASK PATH 70001 END 52 TASK START 53 TASK PATH 70001	7 7 7 7 7 7 7 7 7 6 6 10 6 6 11 6 6 11 6 6 11 6 6 11 6 6 11	JOB JOB 70001 JOB JOB JOB JOB 60017 JOB 60010 JOB 60010 JOB 60010 JOB 60010 JOB	2 TI=707 2 TI=707 2 TI=707 2 TI=707 2 TI=707 2 TI=706 2 TI=706 2 TI=706 2 TI=706 2 TI=706 2 TI=706 2 TI=706	LENGTH 256 LENGTH 256 LENGTH 72 LENGTH 52 LENGTH 4 LENGTH 4	120 RATE 120 RATE 120 RATE 120 RATE 120
32367 TUS M E 32367 TUS MS 32367 TUS MS 32369 TUS M E 32369 TUS M E 32369 TUS M E 32369 TUS M T 32370 TUS MS 32370 TUS M E	END 29 TASK START 28 TASK PATH 70002 START 29 TASK PATH 70001 END 28 TASK END 29 TASK END TASK EXECUTING TASK START 54 TASK PATH 70001 END 54 TASK START 50 TASK START 52 TASK PATH 70001 END 52 TASK START 53 TASK PATH 70001 END 52 TASK START 53 TASK PATH 70001 END 52 TASK START 53 TASK PATH 70001 END 53 TASK	7 7 7 7 7 7 7 6 6 10 6 6 11 6 6 11 6 6 11 6 6 11 6 6 11 6 6 6 11 6 6 6 11 6 6 6 11 6	JOB JOB 70001 JOB 70002 JOB JOB JOB JOB 60017 JOB 60010 JOB JOB 60010 JOB JOB JOB 60010 JOB	2 TI=707 2 TI=707 2 TI=707 2 TI=707 2 TI=707 2 TI=706 2 TI=706 2 TI=706 2 TI=706 2 TI=706 2 TI=706 2 TI=706 2 TI=706	LENGTH 256 LENGTH 256 LENGTH 72 LENGTH 52 LENGTH 4 LENGTH 4	120 RATE 120 RATE 120 RATE 120 RATE 120 RATE 120
32367 TUS M E 32367 TUS MS 32367 TUS MS 32369 TUS M E 32369 TUS M E 32369 TUS T E 32369 TUS T X 32370 TUS MS 32370 TUS M E	END 29 TASK START 28 TASK PATH 70002 START 29 TASK PATH 70001 END 28 TASK END 29 TASK END TASK EXECUTING TASK START 54 TASK PATH 70001 END 54 TASK START 50 TASK START 52 TASK PATH 70001 END 52 TASK PATH 70001 END 52 TASK START 53 TASK PATH 70001	7 7 7 7 7 7 7 7 7 6 6 10 6 6 11 6 6 11 6 6 11 6 6 11 6 6 11	JOB JOB 70001 JOB 70002 JOB JOB JOB JOB 60017 JOB 60010 JOB JOB 60010 JOB JOB JOB 60010 JOB	2 TI=707 2 TI=707 2 TI=707 2 TI=707 2 TI=707 2 TI=706 2 TI=706 2 TI=706 2 TI=706 2 TI=706 2 TI=706 2 TI=706 2 TI=706 2 TI=706 2 TI=706	LENGTH 256 LENGTH 256 LENGTH 72 LENGTH 52 LENGTH 4 LENGTH 4	RATE 120

32370 TUS M E	END 26 TASK START 6 TASK PATH 70001 END 6 TASK START 10 TASK PATH 70001	6	JOB	2 7	r1=706		
32370 TUS MS	START 6 TASK	6	JOB	2 7	rI=706	LENGTH	RATE
	PATH 70001	11	60010			12	120
32370 THE ME	END 6 TASK	6	JOB	2 1	rI=706		
32370 THE ME	START 10 TASK	6	JOB	2 9	rT=706	CENCTH	RATE
J2J/0 103 FIB	PATH 70001	11	60010		12 700	2	חלו
2220 muc M #	END 10 TASK START 20 TASK PATH 70001 END 20 TASK START 22 TASK PATH 70001		60010 JOB JOB	2 1	PT-706	_	120
32370 TUS M E	END 10 TASK	6	JUB	2 .	11-700 11-706	T TERROPET	DAME
323/0 TUS MS	START 20 TASK		JUB	۷.	TT=\00	LENGIN	KAIL
	PATH /UUUI	ΤŢ	60010			2	120
32370 TUS M E	END 20 TASK	6	JOB	2 3	LT=100		
32370 TUS MS	START 22 TASK	6	JOB	2 3	[I=706]	LENGTH	RATE
	PATH 70001	11	60014 JOB			6	120
32370 TUS M E	END 22 TASK START 50 TASK PATH 70001	6	JOB	2 1	FI=706	•	
32370 TUS MS	START 50 TASK	6	JOB	2 :	rI=706	LENGTH	RATE
	PATH 70001	10	60009			52	120
32370 THS M E	END 50 TASK	6	60009 Job	2 1	rI=706	-	
32370 THE ME	START 57 TASK	6	JOB	2 9	PT=706	T.ENGTH	RATE
32370 100 110	END 50 TASK START 52 TASK PATH 70001	10	50000		11. 100	٨	120
20270 mile M m	END 52 TASK START 53 TASK PATH 70001	10	60009 JOB	2 6	77-704	*	120
32370 TUS M E	ENU 32 IASK	0	JUB	2 7	TT=/UO		7 4 11 11
32370 TUS MS	START 53 TASK	6					
	PATH 70001	11	60014	_		36	120
32370 TUS M E	PATH 70001 END 53 TASK START 27 TASK PATH 60013 END 27 TASK START 7 TASK PATH 60010 END 7 TASK START 11 TASK	6	JOB	2 7	TI=706		
32370 TUS MS	START 27 TASK	6	JOB	2 :	ri=706	LENGTH	RATE
	PATH 60013	10	70001			12	120
32370 TUS M E	END 27 TASK	6	JОВ	2 :	TI=706		
32370 TUS MS	START 7 TASK	6	JOВ	2 1	rı=706	LENGTH	RATE
	PATH 60010	11	70001			56	120
32370 THS M E	END 7 TASK	6	JOB	2 .	TT=706		
32370 TUE ME	STADA 11 LYSK	6	TOR	2	TT=706	LENCTH	₽ ΔΨΕ
J2370 103 113	DATE 40010	11	70001	٠.	11 /40	26	120
22270 MHC W E	FAIR GOOLG	11	70001	ο,	mT_704	20	120
32370 TUS M E	END 11 TASK	6	JOB	2 :	TI=706	. mwamu	7.20 7.457
32370 TUS M E	END 11 TASK START 21 TASK	6	JOB JOB	2 :	TI=706 TI=706	LENGTH	RATE
32370 TUS M E	END 11 TASK START 21 TASK PATH 60010	6 6	JOB JOB 70001	2 :	TI=706 TI=706	LENGTH	RATE 120
32370 TUS M E	PATH 60010 END 7 TASK START 11 TASK PATH 60010 END 11 TASK START 21 TASK PATH 60010 END 21 TASK	6 6 11 6	JOB JOB 70001 JOB	2 :	TI=706 TI=706 TI=706	LENGTH 14	RATE 120
32370 TUS M E	END 11 TASK START 21 TASK PATH 60010 END 21 TASK START 23 TASK	6 11 6	JOB JOB 70001 JOB JOB	2 1 2 1 2 1 2 1	TI=706 TI=706 TI=706 TI=706	LENGTH 14 LENGTH	RATE 120 RATE
32370 TUS M E	END 11 TASK START 21 TASK PATH 60010 END 21 TASK START 23 TASK PATH 60014	6 6 11 6	JOB JOB 70001 JOB JOB 70001	2 : 2 : 2 : 2 : 2	TI=706 TI=706 TI=706 TI=706	LENGTH 14 LENGTH 18	RATE 120 RATE 120
32370 TUS M E	END 11 TASK START 21 TASK PATH 60010 END 21 TASK START 23 TASK PATH 60014 END 23 TASK	6 6 11 6 6	JOB JOB 70001 JOB JOB 70001 JOB	2 : 2 : 2 : 2 : 2 : 2 : 2 : 2 : 2 : 2 :	TI=706 TI=706 TI=706 TI=706 TI=706	LENGTH 14 LENGTH 18	RATE 120 RATE 120
32370 TUS M E	END 11 TASK START 21 TASK PATH 60010 END 21 TASK START 23 TASK PATH 60014 END 23 TASK START 53 TASK	6 6 11 6 11 6	JOB JOB 70001 JOB JOB 70001 JOB JOB	2 : 2 : 2 : 2 : 2 : 2 : 2 : 2 : 2 : 2 :	TI=706 TI=706 TI=706 TI=706 TI=706 FI=706	LENGTH 14 LENGTH 18 LENGTH	RATE 120 RATE 120 RATE
32370 TUS M E 32370 TUS MS 32370 TUS M E 32370 TUS M E 32370 TUS M E 32370 TUS MS	START 23 TASK PATH 60014 END 23 TASK START 53 TASK	6 11 6	JOB 70001 JOB JOB	2 :	TI=706 TI=706 TI=706 TI=706	LENGTH 18 LENGTH	RATE 120 RATE
32370 TUS M E 32370 TUS MS 32370 TUS M E 32370 TUS M E 32370 TUS M E 32370 TUS MS	START 23 TASK PATH 60014 END 23 TASK START 53 TASK	6 11 6	JOB 70001 JOB JOB	2 :	TI=706 TI=706 TI=706 TI=706	LENGTH 18 LENGTH	RATE 120 RATE
32370 TUS M E 32370 TUS MS 32370 TUS M E 32370 TUS M E 32370 TUS M E 32370 TUS MS	START 23 TASK PATH 60014 END 23 TASK START 53 TASK	6 11 6	JOB 70001 JOB JOB	2 :	TI=706 TI=706 TI=706 TI=706	LENGTH 18 LENGTH	RATE 120 RATE
32370 TUS M E 32370 TUS MS 32370 TUS M E 32370 TUS M E 32370 TUS M E 32370 TUS MS	START 23 TASK PATH 60014 END 23 TASK START 53 TASK	6 11 6	JOB 70001 JOB JOB	2 :	TI=706 TI=706 TI=706 TI=706	LENGTH 18 LENGTH	RATE 120 RATE
32370 TUS M E 32370 TUS MS 32370 TUS M E 32370 TUS M E 32370 TUS M E 32370 TUS MS	START 23 TASK PATH 60014 END 23 TASK START 53 TASK	6 11 6	JOB 70001 JOB JOB	2 :	TI=706 TI=706 TI=706 TI=706	LENGTH 18 LENGTH	RATE 120 RATE
32370 TUS M E 32370 TUS MS 32370 TUS M E 32370 TUS M E 32370 TUS M E 32370 TUS MS	START 23 TASK PATH 60014 END 23 TASK START 53 TASK	6 11 6	JOB 70001 JOB JOB	2 :	TI=706 TI=706 TI=706 TI=706	LENGTH 18 LENGTH	RATE 120 RATE
32370 TUS M E 32370 TUS MS 32370 TUS M E 32370 TUS M E 32370 TUS M E 32370 TUS MS	START 23 TASK START 23 TASK PATH 60014 END 23 TASK START 53 TASK PATH 70001 END 53 TASK START 6 TASK PATH 70001 END 6 TASK START 10 TASK	6 6 6 6 6 6 6 6 6 6 6 6 6	JOB JOB JOB 6C013 JOB JOB 60009 JOB JOB	2 : 2 : 2 : 2 : 2 : 2 : 2 : 2 : 2 : 2 :	TI=706 TI=706 TI=706 TI=706	LENGTH 18 LENGTH 36 LENGTH 12 LENGTH	RATE 120 RATE 120 RATE 120 RATE
32370 TUS M E 32370 TUS MS 32370 TUS M E 32370 TUS M E 32370 TUS M E 32370 TUS M E 32370 TUS M E 32371 TUS MS 32371 TUS M E 32371 TUS MS	START 23 TASK START 23 TASK PATH 60014 END 23 TASK START 53 TASK PATH 70001 END 53 TASK START 6 TASK PATH 70001 END 6 TASK START 10 TASK PATH 70001	6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	JOB 70001 JOB 50B 6C013 JOB 60009 JOB 50B 60009	2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1	TI=706 TI=706 TI=706 TI=706 TI=706 TI=706 TI=706	LENGTH 18 LENGTH	RATE 120 RATE
32370 TUS M E 32371 TUS M E 32371 TUS M E 32371 TUS M E 32371 TUS M E	START 23 TASK START 23 TASK PATH 60014 END 23 TASK START 53 TASK PATH 70001 END 53 TASK START 6 TASK PATH 70001 END 6 TASK START 10 TASK PATH 70001 END 10 TASK	10 6 6 10 6 6 10 6	JOB 70001 JOB 50B 6C013 JOB 60009 JOB 50B 60009	2 : 2 : 2 : 2 : 2 : 2 : 2 : 2 : 2 : 2 :	TI=706 TI=706 TI=706 TI=706 TI=706 TI=706 TI=706 TI=706	LENGTH 18 LENGTH 36 LENGTH 12 LENGTH 2	RATE 120 RATE 120 RATE 120 RATE 120
32370 TUS M E 32370 TUS MS 32370 TUS M E 32370 TUS M E 32370 TUS M E 32370 TUS M E 32370 TUS M E 32371 TUS MS 32371 TUS M E 32371 TUS MS	START 23 TASK START 23 TASK PATH 60014 END 23 TASK START 53 TASK PATH 70001 END 53 TASK START 6 TASK PATH 70001 END 6 TASK START 10 TASK PATH 70001 END 10 TASK START 20 TASK	10 6 6 10 6 6 10 6 6 6	JOB JOB 70001 JOB JOB 60013 JOB 60009 JOB	2 : 2 : 2 : 2 : 2 : 2 : 2 : 2 : 2 : 2 :	TI=706 TI=706 TI=706 TI=706 TI=706 TI=706 TI=706 TI=706	LENGTH 36 LENGTH 12 LENGTH 2 LENGTH	RATE 120 RATE 120 RATE 120 RATE 120 RATE 120 RATE
32370 TUS M E 32371 TUS M E	START 23 TASK START 23 TASK PATH 60014 END 23 TASK START 53 TASK PATH 70001 END 53 TASK START 6 TASK PATH 70001 END 6 TASK START 10 TASK PATH 70001 END 10 TASK START 20 TASK PATH 70001	10 6 6 10 6 6 10 6	JOB JOB 70001 JOB JOB 60013 JOB 60009 JOB JOB JOB 60009 JOB JOB GO009 JOB JOB	2 : 2 : 2 : 2 : 2 : 2 : 2 : 2 : 2 : 2 :	TI=706 TI=706 TI=706 TI=706 TI=706 TI=706 TI=706 TI=706	LENGTH 18 LENGTH 36 LENGTH 12 LENGTH 2	RATE 120 RATE 120 RATE 120 RATE 120
32370 TUS M E 32371 TUS M E	START 23 TASK START 23 TASK PATH 60014 END 23 TASK START 53 TASK PATH 70001 END 53 TASK START 6 TASK PATH 70001 END 6 TASK START 10 TASK PATH 70001 END 10 TASK START 20 TASK	10 6 6 10 6 6 10 6 6 10 6 6 10 6 6 10 6 6 6 10 6 6 6 6	JOB JOB 70001 JOB JOB 60013 JOB 60009 JOB	2 : 2 : 2 : 2 : 2 : 2 : 2 : 2 : 2 : 2 :	TI=706 TI=706 TI=706 TI=706 TI=706 TI=706 TI=706 TI=706	LENGTH 36 LENGTH 12 LENGTH 2 LENGTH	RATE 120 RATE 120 RATE 120 RATE 120 RATE 120 RATE
32370 TUS M E 32371 TUS M E	START 23 TASK START 23 TASK PATH 60014 END 23 TASK START 53 TASK PATH 70001 END 53 TASK START 6 TASK PATH 70001 END 6 TASK START 10 TASK PATH 70001 END 10 TASK START 20 TASK PATH 70001	10 6 6 10 6 6 10 6 6 10 6 6 10 6 6 10 6 6 6 10 6 6 6 6	JOB JOB 70001 JOB JOB GO009 JOB JOB JOB GO009 JOB JOB JOB JOB JOB JOB JOB JOB	2 : 2 : 2 : 2 : 2 : 2 : 2 : 2 : 2 : 2 :	TI=706 TI=706 TI=706 TI=706 TI=706 TI=706 TI=706 TI=706 TI=706	LENGTH 18 LENGTH 36 LENGTH 12 LENGTH 2 LENGTH 2	RATE 120 RATE 120 RATE 120 RATE 120 RATE 120 RATE
32370 TUS M E 32371 TUS M E	START 23 TASK START 23 TASK PATH 60014 END 23 TASK START 53 TASK PATH 70001 END 53 TASK START 6 TASK PATH 70001 END 6 TASK START 10 TASK PATH 70001 END 10 TASK START 20 TASK PATH 70001 END 10 TASK START 20 TASK PATH 70001 END 20 TASK	10 6 6 10 6 10 6 6 10 6 6 10 6 6 6 10 6 6 6 6	JOB JOB 70001 JOB JOB 60009 JOB JOB JOB 60009 JOB	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	TI=706 TI=706 TI=706 TI=706 TI=706 TI=706 TI=706 TI=706 TI=706 TI=706	LENGTH 18 LENGTH 36 LENGTH 12 LENGTH 2 LENGTH 2	RATE 120 RATE 120 RATE 120 RATE 120 RATE 120
32370 TUS M E 32371 TUS M E	START 23 TASK START 23 TASK PATH 60014 END 23 TASK START 53 TASK PATH 70001 END 53 TASK START 6 TASK PATH 70001 END 6 TASK START 10 TASK PATH 70001 END 10 TASK START 20 TASK PATH 70001 END 10 TASK START 20 TASK PATH 70001 END 20 TASK START 22 TASK	10 6 6 10 6 6 10 6 6 10 6 6 10 6 6 10 6 6 10 6 6 10 6 6 6 10 6 6 6 10 6 6 6 6	JOB JOB 70001 JOB JOB 60009 JOB JOB JOB 60009 JOB	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	TI=706 TI=706 TI=706 TI=706 TI=706 TI=706 TI=706 TI=706 TI=706 TI=706	LENGTH 18 LENGTH 12 LENGTH 2 LENGTH 2 LENGTH 2	RATE 120
32370 TUS M E 32371 TUS M E	START 23 TASK PATH 60014 END 23 TASK START 53 TASK PATH 70001 END 53 TASK START 6 TASK PATH 70001 END 6 TASK START 10 TASK PATH 70001 END 10 TASK START 20 TASK PATH 70001 END 20 TASK START 22 TASK PATH 70001 END 22 TASK	10 6 6 10 6 6 10 6 6 10 6 6 10 6 6 10 6 6 10 6 6 10 6 6 6 10 6 6 6 10 6 6 6 6	JOB JOB 70001 JOB 60013 JOB 60009 JOB JOB 60009 JOB JOB 60009 JOB JOB 60009 JOB	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	TI=706	LENGTH 18 LENGTH 12 LENGTH 2 LENGTH 2 LENGTH 2	RATE 120 RATE 120 RATE 120 RATE 120 RATE 120 RATE 120
32370 TUS M E 32371 TUS M E	START 23 TASK PATH 60014 END 23 TASK START 53 TASK PATH 70001 END 53 TASK START 6 TASK PATH 70001 END 10 TASK START 10 TASK START 20 TASK START 20 TASK PATH 70001 END 20 TASK START 22 TASK PATH 70001 END 20 TASK START 22 TASK PATH 70001 END 20 TASK START 22 TASK START 7 TASK	10 6 6 10 6 6 10 6 6 6 6 6 6 6 6 6 6 6 6	JOB JOB 70001 JOB JOB 60009 JOB JOB 60009 JOB JOB 60009 JOB	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	TI=706	LENGTH 18 LENGTH 36 LENGTH 12 LENGTH 2 LENGTH 2 LENGTH 6	RATE 120 RATE 120 RATE 120 RATE 120 RATE 120 RATE 120
32370 TUS M E 32371 TUS M E	START 23 TASK PATH 60014 END 23 TASK START 53 TASK PATH 70001 END 53 TASK START 6 TASK PATH 70001 END 6 TASK START 10 TASK PATH 70001 END 10 TASK PATH 70001 END 10 TASK START 20 TASK PATH 70001 END 20 TASK START 22 TASK PATH 70001 END 20 TASK START 22 TASK PATH 70001 END 20 TASK START 22 TASK PATH 70001 END 20 TASK START 7 TASK PATH 70001	10 6 6 10 6 10 6 10 6 10 6 10 6 10 6 10	JOB JOB 70001 JOB 60013 JOB 60009 JOB JOB 60009 JOB JOB 60009 JOB JOB JOB 70001	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	TI=706	LENGTH 18 LENGTH 12 LENGTH 2 LENGTH 2 LENGTH 6 LENGTH	RATE 120
32370 TUS M E 32371 TUS M E	START 23 TASK PATH 60014 END 23 TASK START 53 TASK PATH 70001 END 53 TASK START 6 TASK PATH 70001 END 6 TASK PATH 70001 END 10 TASK PATH 70001 END 10 TASK START 20 TASK PATH 70001 END 20 TASK PATH 70001 END 20 TASK START 22 TASK PATH 70001 END 20 TASK START 22 TASK PATH 70001 END 20 TASK START 7 TASK PATH 70001 END 22 TASK START 7 TASK PATH 60009 END 7 TASK	10 6 10 6 10 6 10 6 10 6 10 6 10 6 10 6	JOB JOB 70001 JOB GC013 JOB 60009 JOB JOB 60009 JOB JOB 60009 JOB	2 : 2 : 2 : 2 : 2 : 2 : 2 : 2 : 2 : 2 :	TI=706	LENGTH 18 LENGTH 12 LENGTH 2 LENGTH 2 LENGTH 6 LENGTH 6	RATE 120
32370 TUS M E 32371 TUS M E	START 23 TASK PATH 60014 END 23 TASK START 53 TASK PATH 70001 END 53 TASK START 6 TASK PATH 70001 END 6 TASK PATH 70001 END 10 TASK PATH 70001 END 10 TASK START 20 TASK PATH 70001 END 20 TASK START 22 TASK PATH 70001 END 20 TASK START 22 TASK PATH 70001 END 20 TASK START 7 TASK PATH 70001 END 22 TASK START 7 TASK PATH 60009 END 7 TASK START 11 TASK	10 6 6 10 6 6 10 6 6 10 6 6 6 10 6 6 6 6	JOB JOB 70001 JOB 60013 JOB 60009 JOB JOB 60009 JOB JOB 50B 60009 JOB	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	TI=706	LENGTH 36 LENGTH 12 LENGTH 2 LENGTH 2 LENGTH 6 LENGTH 56 LENGT:	RATE 120
32370 TUS M E 32371 TUS M E	START 23 TASK PATH 60014 END 23 TASK START 53 TASK PATH 70001 END 53 TASK START 6 TASK PATH 70001 END 6 TASK PATH 70001 END 10 TASK PATH 70001 END 10 TASK START 20 TASK PATH 70001 END 20 TASK START 22 TASK PATH 70001 END 20 TASK START 22 TASK PATH 70001 END 20 TASK START 7 TASK PATH 70001 END 22 TASK START 7 TASK PATH 60009 END 7 TASK START 11 TASK PATH 60009	10 6 6 10 6 10 6 10 6 10 6 10 6 10 6 10	JOB JOB 70001 JOB JOB 60009 JOB 60009 JOB JOB 60009 JOB JOB 70001 JOB JOB 70001 JOB JOB 70001	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	TI=706	LENGTH 18 LENGTH 12 LENGTH 2 LENGTH 2 LENGTH 6 LENGTH 6	RATE 120
32370 TUS M E 32371 TUS M E	START 23 TASK PATH 60014 END 23 TASK START 53 TASK PATH 70001 END 53 TASK START 6 TASK PATH 70001 END 6 TASK PATH 70001 END 10 TASK PATH 70001 END 10 TASK START 20 TASK PATH 70001 END 20 TASK START 22 TASK PATH 70001 END 20 TASK START 22 TASK PATH 70001 END 20 TASK START 7 TASK PATH 70001 END 22 TASK START 7 TASK PATH 60009 END 7 TASK START 11 TASK PATH 60009 END 11 TASK	10 6 10 6 10 6 10 6 10 6 10 6 10 6 10 6	JOB JOB 70001 JOB 60013 JOB 60009 JOB JOB 60009 JOB JOB 70001 JOB JOB 70001 JOB	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	TI=706	LENGTH 36 LENGTH 12 LENGTH 2 LENGTH 2 LENGTH 6 LENGTH 56 LENGTI. 28	RATE 120
32370 TUS M E 32371 TUS M E	START 23 TASK PATH 60014 END 23 TASK START 53 TASK PATH 70001 END 53 TASK START 6 TASK PATH 70001 END 6 TASK PATH 70001 END 10 TASK PATH 70001 END 10 TASK START 20 TASK PATH 70001 END 20 TASK START 22 TASK PATH 70001 END 20 TASK START 22 TASK PATH 70001 END 20 TASK START 7 TASK PATH 70001 END 22 TASK START 7 TASK PATH 60009 END 7 TASK START 11 TASK PATH 60009	10 6 6 10 6 6 10 6 6 10 6 6 10 6 6 10 6 6 10 6 6 10 6 6 10 6 6 6 10 6 6 6 10 6 6 6 6	JOB JOB 70001 JOB JOB 60009 JOB 60009 JOB JOB 60009 JOB JOB 70001 JOB JOB 70001 JOB JOB 70001	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	TI=706	LENGTH 36 LENGTH 12 LENGTH 2 LENGTH 2 LENGTH 6 LENGTH 56 LENGTI. 28	RATE 120

32371 TUS M E	END 21 TASK	6	JOB	2 TI=706		
32371 TUS MS	START 23 TASK	6	JOB	2 TI=706		RATE
	PATH 60013	10	70001		18	120
32371 TUS M E	end 23 task	6	JOB	2 TI=706		
32371 TUS T E	end task	6	JOB	2 TI=706		
32371 TUS T X	EXECUTING TASK	9	JOB	2 TI=709		
32374 TUS T E	END TASK	9	JOB	2 TI=709		
32375 TUS T X	EXECUTING TASK	14	JOB JOB	2 TI=714		
32375 TUS T E	END TASK	14	JOB	2 TI=714		
32375 TUS T X	EXECUTING TASK	34	JOB TOD	2 TI=723	T DAICTH	ਹਾਲੇ ਹਾ
32375 TUS MS	START 59 TASK PATH 60027	34 0	JOB 70001	2 TI=723	LENGIH 10	RATE 1
32377 TUS T W	MSG WAIT TASK	34	JOB	2 TI=723	10	
32385 TUS M E	END 59 TASK	34	JOB	2 TI=723		
32385 TUS T X	EXECUTING TASK	34	JOB	2 TI=723		
32385 TUS T E	END TASK	34	JOB	2 TI=723		
32400 TUS T X	EXECUTING TASK	13	JOB	2 TI=713		
32400 TUS T X	EXECUTING TASK	14	JOB	2 TI=714		
32400 TUS T E	END TASK	13	JOB	2 TI=713		
32400 TUS T E	END TASK	14	JOB	2 TI=714		
32400 TUS T X	EXECUTING TASK	34	JOB	2 TI=723		
32400 TUS MS	START 59 TASK	34	JOB	2 TI=723	LENGTH	RATE
	PATH 60027	0	70001		10	1
32401 TUS T I	INTERRUPT TASK	34	JOB	2 TI=723		
32401 TUS T X	EXECUTING TASK	7	JOB	2 TI=707		
32401 TUS MS	START 58 TASK	7	JOB	2 TI=707	LENGTH	RATE
	PATH 70001	24	60095		512	120
32401 TUS MS	START 28 TASK	7	JOB	2 TI=707	LENGTH	RATE
	PATH 70004	1	70001		256	120
32401 TUS MS	START 29 TASK	7	JOB	2 TI=707		RATE
•	PATH 70001	2	70004		256	120
32403 TUS M E	END 28 TASK	7	JOB	2 TI=707		
32403 TUS M E	END 29 TASK	7	JOB	2 TI=707		
32403 TUS T W	MSG WAIT TASK	7	JOB	2 TI=707		
32403 TUS T X	EXECUTING TASK	6	JOB	2 TI=706	* muomit	D.AMT
32403 TUS MS	START 51 TASK	6	JOB	2 TI=706		RATE
22/02 882 3/ 5	PATH 70001	13	60012	2 77-706	48	120
32403 TUS M E 32403 TUS MS	END 51 TASK START 54 TASK	6 6	JOB JOB	2 TI=706 2 TI=706	T ENOTH	RATE
32403 103 Ma .	START 54 TASK PATH 70001	10	60018	2 11-700	72	120
32403 TUS M E	END 54 TASK	6	JOB	2 TI=706	14	140
32403 TUS MS	START 50 TASK	6	JOB	2 TI=706	T.ENGTH	RATE
32403 100 110	PATH 70001	12	60011	2 12 700	52	120
32403 TUS M E	END 50 TASK	- 6		2 TI=706		
32403 TUS MS	START 52 TASK	6		2 TI=706		RATE
	PATH 70001	12	60011		4	120
32403 TUS M E	END 52 TASK	6	JOB	2 TI=706	-	
32403 TUS MS	START 53 TASK	6	JOB	2 TI=706	LENGTH	RATE
	PATH 70001	13	60016		36	120
32403 TUS M E	END 53 TASK	6	JOB	2 TI=706		
32403 TUS MS	START 8 TASK	6	JOB	2 TI=706	LENGTH	RATE
	PATH 70001	13	60012		2	120
32403 TUS M E	END 8 TASK	6		2 TI=706		
32403 TUS MS	START 12 TASK	6	JOB	2 TI=706		
	PATH 70001	10	60009		12	120
32403 TUS M E	END 12 TASK	6		2 TI=706		
32403 TUS MS	START 14 TASK	6		2 TI=706		RATE
00/02 mrg 2: 7	PATH 70001	11	60010	0 MT_706	. 10	120
32403 TUS M E	END 14 TASK	6		2 TI=706		RATE
COMPANY THE ME						U A T'W
32403 TUS MS	START 16 TASK PATH 70001	6 12	60011	2 TI=706	10	120

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22402	wite.	M E MS	END	16	TASK		6	TOB	2	TT=706	:	
32403	TUD	M E	START	18	TASK		6	JOB	2	TT=706	LENGTH	RATE
J240J	100	MO	PATH	7000	1	13	•	60012	_	11 ,00	2	120
32403	TUS	ME	END	18	TASK	-	6	JOB	2	TI=706	٠.	
32403	TUS	MS	START	24	TASK		6	JOB	2	TI=706	LENGTH	RATE
			PATH	7000	1	13		60016			6	120
32403	TUS	M E	END	24	TASK		6	JOB	2	TI=706		
32403	TUS	MS	START	26	TASK		6	JOB	2	TI=706	LENGTH	RATE
			PATH	7000	l magg	11	٠.	60014		mT_70 <i>C</i>	2	120
32403	TUS	ME	END	26	TASK		6	JOB	2	TI=/00	נוליטונע ל	ישיים אים
32403	TUS	M5	DATH	7000	IASK	12	O	60011	-	11-700	12	120
32403	THS	мъ	END	6	TASK	12	б	JOB	2	TI=706		120
32403	TUS	MS	START	10	TASK		6	JOB	2	TI=706	LENGTH	RATE
			PATH	7000	1	12		60011			2	120
32403	TUS	МЕ	END	10	TASK		6	JOB	2	TI=706		
32403	TUS	MS	START	20	TASK		6	JOB	2	TI=706	LENGTH	RATE
			PATH	7000	1	12	_	60011	_		2	120
32403	TUS	ME	END	20	TASK		6	JOB	2	TI=706	- -	75 A 1977
32403	TUS	MS	START	7000	TASK	12	ь	10B	2	TT=/06	LENGTH	120
22403	פונים	мъ	FMD	7000	ተ	12	6	TUB	2	TT=706	U	120
32403	THE	MS	START	9	TASK		6	JOB	2	TT=706	LENGTH	RATE
50-,55	-00	110	PATH	6001	.2	13	•	70001	_		24	120
32403	TUS	ME	END	9	TASK		6	JOB	2	TI=706		
32403	TUS	MS	START	13	TASK		6	JOB	2	TI=706	LENGTH	RATE
			PATH	6000	19	10		70001	_		32	120
32403	TUS	ME	END	13	TASK		6	JOB	2	TI=706	* T1170MII	n Amm
32403	TUS	MS	START	15 6001	TASK	11	6	70001	2	.T=\00	LENGIH	RATE
22403	TITE	M E MS	PATH	15	.U ' ምልፍድ	TT	6	TOB	2	TT=706	34	120
32403	THE	MS	START	17	TASK		6	JOB	2	TI=706	LENGTH	RATE
J2-,03	100		PATH	6001	.1	12	•	70001	_		30	120
32403	TUS	ME	END	17	TASK		6	JOB	2	TI=706		
32403	TUS	MS	START	19	TASK		6	JOB	2	TI=706	LENGTH	RATE
			PATH	6001	.2	13	_	70001	_		14	120
32403	TUS	ME	END	19	TASK		6	JOB	2	TI=706	- mircmit	nam
32403	TUS	MS	START	25	TASK	7.0	6	JUB 70001	2	TT=100	LENGTH	KATE
22702	wite	M T	PATH	0001	.0 ማለወሆ	13	۵.	70001	2	TT=706	20	120
32403	THE	MS M P	ይጥል የጥልዝም	27	TASK		6	JOB	2	TT=706	LENGTH	RATE
J2-10J	100	240	PATH	6001	.4	11	•	70001	_	12 700	12	120
32403	TUS	ME	END	27	TASK		6	JOB	2	TI=706		
32403	TUS	MS	START	7	<u>TASK</u>		6	JOB	2	TI=706	LENGTH	RATE
			TUTH	0001	. =	12		/0001			50	120
32403			END		TASK		6			TI=706		
32403	TUS	MS	START			12	6	JOB 70001		TT=100	LENGTH 28	120
32403	THE	мя	PATH END	6001	TASK	1.2	6			TI=706	20	1,20
32403			START	21	TASK		6	JOB			LENGTH	RATE
32703	1,00	110	PATH	6001		12	Ť	70001			14	120
32403	TUS	M E	END		TASK	_	6	aol		TI=706		
32403	TUS	MS	START		TASK		6	JOB	2	TI=706	LENGTH	RATE
			PATH	6001		12	_	70001			18	120
32403			END	23	TASK		6			TI=706		
32405			END	58			7			TI=707		
32405 32405			INTER				6 7	JOB JOB		TI=706 TI=707		
32405			EXECU:				7				LENGTH	RATE
J-40J	100	*114	PATH	7000		1	•	70001			256	120

		,						
32405 TUS MS 32407 TUS M E 32407 TUS M E	START 29 TASK		7	JOB	2	TI=707	LENGTH	RATE
32407 TUS M E 32407 TUS M E 32407 TUS M E 32407 TUS MS	PATH 70001	2		70003	غ 	- ¥-	256	120
32407 TUS M E	END 28 TASK		7	JOB	2.	TT=707	1.	
32407 TUS M E	END 29 TASK		7	JOB	2	TI=/0/	T 1331C00111	
32407 TUS MS	START 28 TASK	1	- /	10B	2	T1=/U/	LENGTH	RATE
32407 TUS MS	PATH 70002		_	70001 JOB				
32407 TUS MS 32409 TUS M E	START 29 TASK PATH 70001	2	,	70002	Z	TT=101	LENGTH	
22400 200 36 2	PAIR /UUU1	4	. 7	70002	9	ガエムフロフ	230	120
32409 TUS M E	END 20 TABLE		7	JOB JOB JOB	2	TT-707		
32409 TUS T E			7	JOB	2	TT=707		
32409 TUS T X	EXECUPTING TASK		á	JOB	2	TT=707		
32409 105 1 K	END 59 TASK		34	TOR	2	TT=723		
32410 TUS M E 32411 TUS MS	START 54 TASK		6	JOB	2	TI=706	LENGTH	RATE
	PATH 70001	10		60017	_		72	120
32411 TUS M E	END 54 TASK			JOB	2	TI=706		
32411 TUS MS	START 50 TASK		6	Ј ОВ ЈО В	2	TI=706	LENGTH	RATE
	PATH 70001	11		60010			52	120
32411 TUS M E	END 50 TASK		6		2	TI=706		
32411 TUS MS	START 52 CASK		6	20R	2	TT=\00	LENGTH	
32411 TUS M E 32411 TUS MS	PATH 70001	11		60010		ř	4	120
32411 TUS M E 32411 TUS MS	END 52 TASK		6		2	TI=706		
32411 TUS MS	START 53 TASK		6	JOB	2	TI=706	LENGTH	
	PATH 70001	12		60015				120
32411 TUS M E	END 53 TASK		6		2	TI=706		
32411 TUS MS	START 26 TASK	10	6					
22/11 muc w #	PATH 70001 END 26 TASK	10		60013				120
32411 TUS M E 32411 TUS MS	END 26 TASK START 6 TASK PATH 70001		б б	JOB JOB	2	TI=706	T DMCTU	שחיא כו
32411 103 M9	PATH 70001	11	U	60010	2		12	
32411 TUS M E	END 6 TASK		6					
32411 TUS MS	END 6 TASK START 10 TASK		6		2	TI=706	LENGTH	RATE
	PATH 70001	11		60010			2	
			6	JOB	2	TI=706		
32411 TUS MS	END 10 TASK START 20 TASK		6	JOB	2	TI=706	LENGTH	
	PATH 70001	11		60010			2	120
32411 TUS M E	END 20 TASK		6	JOB JOB	2	TI=706		
32411 TUS MS	START 22 TASK		6	JOB	2	TI=706	LENGTH	
	PATH 70001			60014			6	120
32411 TUS M E	END 22 TASK		6		2	TI=706		
32411 TUS M E 32411 TUS MS	START 50 TASK		6	308	Z	TT=/06	LENGTH	
		10		60009				120
32411 TUS M E 32411 TUS MS	END 50 TASK START 52 TASK		6	JOB JOB	2	TT=700	T DMCTH	DATE
32411 105 MB	PATH 70001			60009		11-100	LENGIA 4	
32411 TUS M E	END 52 TASK					T=706		
32411 TUS MS	START 53 TASK		6	JOB JOB	2	TT=706	LENGTH	RATE
J2411 100 M	PATH 70001	11	·	60014	_	11 ,00	36	120
32411 TUS M E	END 53 TASK		6	JOB	2	TI=706		
32411 TUS MS	START 27 TASK		6	JOB JOB	2	TI=706	LENGTH	RATE
	PATH 60013	10		70001			12	120
32411 TUS M E	END 27 TASK		6	JOB	2	TI=706		
32411 TUS MS	START 7 TASK		6	JOB JOB	2	TI=706	LENGTH	
	PATH 60010	11		70001			56	120
32411 TUS M E	END 7 TASK		6		2	TI=706		
32411 TUS MS	START II TASK	• -	6	JOB	2	TI=706		
	PATH 60010	11	_	70001		mr ~~ *	28	120
32411 TUS M E 32411 TUS MS	END 11 TASK		6	JOB JOB	2	TT=/06	T DUOM!	JD APPER
32411 TUS MS	START 21 TASK	7 1						
	PATH 60010	ŦŢ		70001			14	120

32411 TUS M E	end 21 task	6	JOB	2 TI=706		
32411 TUS MS	START 23 TASK	6	JOB			
	PATH 60014	11	70001		18	120
32411 TUS M E 32411 TUS MS	END 23 TASK	6	70001 JOB	2 TI=706		
32411 TUS MS	START 53 TASK	6	JOB			
52 , us	PATH 70001	10				120
32411 TUS M E	END 53 TASK	6		2 TI=706		
32412 TUS MS		6	JОВ	2 TI=706	LENGTH	RATE
3	PATH 70001	10	60009		12	120
32412 THS M E		6	60009 JOB	2 TI=706		
32412 TUS M E 32412 TUS MS	START 10 TASK	6	JOB	2 TI=706	LENGTH	RATE
32412 100 110	PATH 70001	10	60000		2	120
32412 THE M II		6		2 TI=706	_	
32412 TUS M E 32412 TUS MS	START 20 TASK	6	JOB	2 TI=706	T.ENGTH	RATE
J2412 100 MO	PATH 70001					
22412 wite M E		6	60009 ЈОВ	2 TT=706	-	120
32412 TUS M E 32412 TUS MS	CTADT 20 TACK	6	TAB	2 97-704	T DMOTH	בויים א כנ
32412 103 M3	PATH 70001 END 22 TASK	10	60013 JOB JOB	2 11-700	DENGIII A	120
22713 with M M	END 22 TASK	10	108	2 TT-706	U	120
32412 TUS M E 32412 TUS MS	START 7 TASK	6	JOB	2 11-700	ניייט ז	DATE
32412 108 MS	PATH 60009					120
32412 TUS M E 32412 TUS MS	PAIN GUUUS	10 6	70001 JOB	2 77-704) O	120
32412 TUS M E	END 7 TASK		JOB	2 II=/00	r DMOTH	n Amiz
32412 TUS MS	START 11 TASK	6				
	PATH 60009	10	70001		28	120
32412 TUS M E 32412 TUS MS	END II TASK	6		2 TI=706	7 1731/2/1913	D A MIN
32412 TUS MS	START 21 TASK	6				
	PATH 60009 END 21 TASK START 23 TASK	10	70001 JOB	o == 706	14	120
32412 TUS M E	END 21 TASK	6	JOB	2 T1=706		
32412 TUS MS	START 23 TASK	- 6	ЈОВ			
	PATH GUULD	10	70001	6 mr 704	18	120
32412 TUS M E	END 23 TASK END TASK EXECUTING TASK END TASK	6	JOB	2 TI=706		
32412 TUS T E	END TASK	6	JOB	2 T1=/06		
32412 TUS T X	EXECUTING TASK	9		2 TI=709		
32414 TUS T E 32414 TUS T X	END TASK	9	JOB	2 TI=709		
		32	JOB	2 TI=722		
32415 TUS T X	EXECUTING TASK	11	JOB	2 TI=711		
32415 TUS T E	END TASK	32	JOB	2 TI=722		
32415 TUS MS	START 32 TASK	11	JOB	2 TI=711	LENGTH	RATE
•	PATH 70001	24	60095 JOB		256	120
32417 TUS M E	END 32 TASK	11	JOB	2 TI=711		
32417 TUS MS	START 33 TASK	11	JOB		LENGTH	
	PATH 60095	24 11 10	70001		256	120
	MSG WAIT TASK	11	JOB	2 TI=711		
	111110011110 111111					
32419 TUS M E	END 33 TASK		JOB	2 TI=711		
32419 TUS T	I INTERRUPT TASK	10	JOB	2 TI=710		
32419 TUS T X	EXECUTING TASK	11	JOB	2 TI=711		
32419 TUS T E	end task	11	JOB	2 TI=711		
32419 TUS T X	EXECUTING TASK	10	JOB	2 TI=710		
32428 TUS T E	end task	10	JOB	2 TI=710		
32428 TUS T X	EXECUTING TASK	. 34	JOB	2 TI=723		
32429 TUS T E	end task	34	JOB	2 TI=723		
32429 TUS T X	EXECUTING TASK	35	JOB	2 TI=724		
32429 TUS MS	START 55 TASK	35	JOB	2 TI=724		RATE
	PATH 70001	6	60001		1024	120
32429 TUS MS	START 56 TASK	35	JOB	2 TI=724		RATE
	PATH 70001	7	60002		1024	120
32429 TUS MS	START 57 TASK	35	JOB	2 TI=724		RATE
	PATH 70001	8	60003		1024	120

32/37	THS	мв			END	55	TASK		35	JOB JOB JOB JOB JOB 60095 JOB 70001 JOB JOB JOB JOB	2	TT=724		
32437	THE	ME			END	56	TASK		35	JOB	7	TT=724		
32437	TUB	ME			END	57	TASK		35	TOR	2	TT=724		
32437	TOO			т	בונט דאישיוטי	יים ווכ	TACK		35	TOR	2	TT=724		
32441	TOD	T T	v		EABGIL	rtng -	TASK		7	TOR	2	TT=707		
32441	TOD	MG	Λ		STADT	58	TACK		7	JOB	2	TI-707	TRNCTH	ው ለጥሮ
25441	103	1,172			DYUR	7000	1 AUK	24		40005	4	11-101	512	120
22441	muc	WC.			CENTER	1000	መለርነን -	24	7	JOB .	9	ポエーフハフ	TENOMI	170
32441	TOO	Ho			DYMIL	7000	THOK	7	,	70001	Z	11-101	256	120
22441	miic	MC.			CMYDW	2000	MACTE	1	7	10001	2	mT_707	TEMONU	
32441	TUS	Mo			DAMU	7000	TASK	2	,	JOB	2	T1=/U/	LENGTH	
20112	mita				PATH	7000	T CTT	Z	-	70004	^	mT_707	250	120
32443	TUS	ME			END	20	TASK		- /	LOE	2	T1=/U/		
32443	TUS	ME			END TO	29	TASK		/	JOB	2	T1=/U/		
32443	TUS	T		W	MSG W	ALT	TASK		/	JOR	2	T1=/0/		
32443	TUS	T	X		EXECU:	LTMG	TASK		6	JOB	2	T1=/06		
32443	TUS	MS			START	21	TASK		6	JOB	2	T1=/06	LENGTH	RATE
					PATH	7000	1	13	_	60012	_		48	120
32443	TUS	ME			END	51	TASK		6	JOB	2	T1=706		
32443	TUS	MS			START	54	TASK		6	JOB	2	TI=706	LENGTH	RATE
					PATH	7000	1	10		60018			72	120
32443	TUS	ΜE			END	54	TASK		6	JOB	2	TI=706		
32443	TUS	MS			START	50	TASK		6	JOB	2	TI=706	LENGTH	RATE
					PATH	7000	1	12		60011			52	120
32443	TUS	ΜЕ			END	50	TASK		6	JOB	2	TI=706		
32443	TUS	MS			START	52	TASK		6	JOB	2	TI=706	LENGTH	RATE
					PATH	7000	I	12		60011			4	120
32443	TUS	ΜЕ			END	52	TASK		6	JOB	2	TI=70€		
32443	TUS	M\$			START	53	TASK		6	JOB	2	TI=706	LENGTH	RATE
					PATH	7000	1	13		60016			36	120
32443	TUS	ΜE			END	53	TASK		6	JOB	2	TI=706		
32443	TUS	MS			START	8	TASK		6	JOB	2	TI=706	LENGTH	RATE
					PATH	7000	1	13		60012			2	120
32443	TUS	ΜE			END	8	TASK		6	JOB	2	TI=706		
32443	TUS	MS			START	12	TASK		6	JOB	2	TI=706	LENGTH	RATE
					PATH	7000	1	10		60009			12	120
32443	TUS	ΜE			END	12	TASK		6	JOB	2	TI=706		
32443	TUS	MS			START	14	TASK		6	JOB	2	TI=706	LENGTH	RATE
					PATH	7000	1	11		60010			10	120
32443	TUS	ΜE			END	14	TASK		6	JOB	2	TI=706		
32443	TUS	MS		•	START	16	TASK		6	JOB	2	TI=706	LENGTH	RATE
					PATH	7000	1	12		60011		•	10	120
32443	TUS	ΜE			END	16	TASK		6	JOB	2	TI=706		
32443	TUS	MS			START	18	TASK		6	JOB JOB JOB JOB JOB JOB JOB JOB	2	TI=705	LENGTH	RATE
					PATH	7000	1	13		60012			2	120
32443	TUS	ΜE			END	18	TASK		6	JOB	2	TI=706		
32443	TUS	MS			START	24	TASK		6		2	TI=706	LENGTH	RATE
					PATH	7000	1	13		60016			6	120
32443	TUS	ΜE			END		TASK		6	JOB	2	TI=706		
32443	TUS	MS			START	26	TASK		6	JOB	2	TI=706	LENGTH	RATE
					PATH	7000	1	11		60014			2	120
32443	TUS	ΜE			END	26	TASK		6	JOB	2	TI=706		
32443	TUS	MS			START	6	TASK		6	JOB	2	TI=706	LENGTH	RATE
					PATH	7000		12		600 1.1		•	12	120
32443	TUS	мЕ					TASK		6			TI=706		
32443					START	10			6	JOB				RATE
					PATH	7000		12		60011			2	120
32443	TUS	ΜE			END		TASK		6					
32443					START		TASK		6	JOB				RATE
					PATH	7000		12	-	60011			2	120
32443	THS	ME			END		TASK		6			TI=706	_	
							~		_		_			

32443 TUS MS	START 22 TASK	6	JOB 2 TI=706 LENGTH RATE
	PATH 70001	12	60015 6 120
32443 TUS M E	END 22 TASK	6	60015 6 120 JOB 2 TI=706
32443 TUS MS	START 9 TASK		JOB 2 TI=706 LENGTH RATE
	PATH 60012	13	70001 24 120
32443 TUS M E	END 9 TASK		JOB 2 TI=706
32443 TUS MS			JOB 2 TI=706 LENGTH RATE
			70001 32 120
32443 TUS M E 32443 TUS MS	END 13 TASK	6	JOB 2 TI=706
32443 THS MS	START 15 TASK		JOB 2 TI=706 LENGTH RATE
52445 100 110	PATH 60010		70001 34 120
32443 TUS M E	PATH 60010 END 15 TASK		JOB 2 TI=706
32443 TUS MS	START 17 TASK	6	JOB 2 TI=706 LENGTH RATE
	PATH 60011		70001 30 120
32443 TUS M E	END 17 TASK		JOB 2 TI=706
32443 TUS MS	START 19 TASK	-	JOB 2 TI=706 LENGTH RATE
32443 105 Ma	DAME 40013		70001 14 120
22//2 muc M E	PATH 60012 END 19 TASK		JOB 2 TI=706
32443 TUS M E 32443 TUS MS	EMI 19 IASK	0	JOB 2 T1=706 LENGTH RATE
32443 TUS MS	START 25 TASK	יו	20001 2 11=700 DEMOTE RATE
	PATH 60016	13	70001 26 120 JOB 2 TI=706
32443 TUS M E	END 25 TASK START 27 TASK		JOB 2 (1=/00
32443 TUS MS	START 27 TASK		JOB 2 TI=706 LENGTH RATE
	PATH 60014		70001 12 120
32443 TUS M E 32443 TUS MS 32443 TUS M E 32443 TUS MS	END 27 TASK	6	JOB 2 TI=706
32443 TUS MS	START 7 TASK	6	JOB 2 TI=706 LENGTH RATE
	PATH 60011	12	70001 56 120
32443 TUS M E	end 7 task	6	JOB 2 TI=706
32443 TUS MS	START II TASK		JOB 2 TI=706 LENGTH RATE
	PATH 60011		70001 - 28 120
32443 TUS M E	END 11 TASK	6	JOB 2 T1=706
	START 21 TASK		JOB 2 TI=706 LENGTH RATE
	PATH 60011 END 21 TASK	12	70001 14 120 JOB 2 TI=706
32443 TUS M E	END 21 TASK	6	JOB 2 TI=706
32443 TUS MS	START 23 TASK		JOB 2 TI=706 LENGTH RATE
	PATH 60015	12	70001 18 120
32443 TUS M E	END 23 TASK		JOB 2 TI=706
32444 TUS MS	START 54 TASK		JOB 2 TI=706 LENGTH RATE
	PATH 70001	10	60017 72 120
32444 TUS M E	END 54 TASK	- 6	1 JOB 2 TI=/U6
32444 TUS MS	START 50 TASK	6	JOB 2 TI=706 LENGTH RATE
	PATH 70001	11	60010 52 120
32444 TUS M E	END 50 TASK	6	JOB 2 TI=706 JOB 2 TI=706 LENGTH RATE
32444 TUS MS	START 52 TASK	6	JOB 2 TI=706 LENGTH RATE
	PATH 70001	11	60010 4 120
32444 TUS M E	END 52 TASK		JOB 2 T1=706
32444 TUS MS	START 53 TASK	6	
	PATH 70001	12	60015 36 120
32444 TUS M E	END 53 TASK	- 6	
32444 TUS MS	START 26 TASK	6	
32444 100 110	PATH 70001	10	60013 2 120
32444 TUS M E	END 26 TASK		3 JOB 2 TI=706
32444 TUS MS	START 6 TASK	6	
2-777 100 PM	PATH 70001	11	60010 · 12 120
32444 TUS M E	END 6 TASK	6	
		6	
32444 TUS MS	START 10 TASK		_
22444 mile 14 12	PATH 70001	11	
32444 TUS M E	END 10 TASK		5 JOB 2 "1=706 5 JOB 2 "1=706 LUMETH PARK
32444 TUS MS	START 20 TASK	- 6	
60/// myc 14 =	PATH 70001	11	60010 2 120
32444 TUS M E	end 20 task	6	5 JOB 2 T1=706

						•						
32444	TUS	MS			TASK		6	JOB				
			PATH	7000		11		60014			6	120
32444			END	22	TASK		6	JOB	2	TI=706		
32444	TUS	MS	START	50	TASK		6	JOB		TI=706		
				7000	1	10		60009			52	120
32444	TUS	ME	END		TASK		6	JOB				
32444	TUS	MS	START	52	TASK		б	JOB			LENGTH	RATE
			PATH	7000	1	10		60009				120
32444	TUS	M E	END	52	TASK		б	JOB .				
32444	TUS	MS	START	53	TASK		6				LENGTH	
				7000		11		60014				120
32444			END	53	TASK		6			TI=706		
32444	TUS	MS	START	27	TASK		6	JOB			LENGTH	
				6001		10		70001			12	120
32444			END		TASK		6	JOB		TI=706		
32444	TUS	MS	START	7	TASK		6	JOB			LENGTH	
				6001		11		70001				120
32444			END	7			6	JOB		TI=706		
32444	TUS	MS	START	11	TASK		6	JOB		TI=706		RATE
				6001	0	11		70001			28	120
32444				-	TASK		6			TI=706		
32444	TUS	MS	START	21	TASK		б	JOB			LENGTH	
			PATH			11		70001			14	120
32444			END	21	TASK		6			TI=706		
32444	TUS	MS	START	23	TASK		6	JOB		TI=706		RATE
				6001		11		70001			18	120
32444			END		TASK		6			TI=706		
32444	TUS	MS		53	TASK		6	JOB			LENGTH	
			PATH			10		60013			_	120
32444					TASK		6			TI=706		
32445			END		TASK		7	JOB		TI=707		
32445			INTERR		TASK		6	JOB		TI=706		
32445			EXECUT		TASK		7	JOB		TI=707		
32445	TUS	MS	START	- 6	TASK		6	JOB			LENGTH	
					I	10		60009			12	120
32445			END	· 6	TASK		6	JOB		TI=706		
32445	TUS	MS	START	28	TASK		7	JOB		T1=/0/	LENGTH	RATE
D0//F	m	140		7000	_	1		70001		mT 707	256	120
32445	105			29	TASK	_	7	JOB	2	TT=/U/	LENGTH	RATE
20115	m110			7000		2	_	70003		mT-706	256	120
32445	TUS	MS		10	TASK	10	6	JOB		TT=\00	LENGTH	
22445	mitte	V 19		7000		10	6	60009 JOB	2	mr_706	2	120
32445			END	10	TASK			JOB	2	TI=700	T DMOUNT	D 4 mE
32445	105	ms	START						~	TT=100	LENGIA 2	120
22776				ንሰባለ				60000				
	mric	W E			l magre	TO	c	60009		ポエーフの を		
		M E	END	20	TASK	ΤÜ	6	60009 JOB		TI=706		
		M E MS	END START	20 22	TASK TASK		6 6	JOB JOB	2 2		LENGTH	RATE
32445	TUS	MS	END START PATH	20 22 7000	TASK TASK I	10	6 6	JOB JOB 60013	2		LENGTH 6	RATE 120
32445 32445	TUS TUS	MS M E	END START PATH END	20 22 7000 22	TASK TASK I TASK		6 6	JOB JOB 60013	2		LENGTH 6	RATE 120
32445	TUS TUS	MS M E	END START PATH END START	20 22 7000 22 7	TASK TASK I TASK TASK	10	6 6 6	JOB JOB 60013 JOB JOB	2 2 2 2	TI=706 TI=706	LENGTH 6 LENGTH	RATE 120 RATE
32445 32445 32445	TUS TUS TUS	MS ME MS	END START PATH END START PATH	20 22 7000 22 7 6000	TASK TASK 1 TASK TASK		6 6 6	JOB JOB 60013 JOB JOB 70001	2 2 2 2	TI=706 TI=706	LENGTH 6 LENGTH 56	RATE 120
32445 32445 32445 32445	TUS TUS TUS	MS ME MS	END START PATH END START PATH END	20 22 7000 22 7 6000	TASK TASK I TASK TASK O TASK	10	6 6 6 6	JOB JOB 60013 JOB JOB 70001 JOB	2 2 2 2	TI=706 TI=706 TI=706	LENGTH 6 LENGTH 56	RATE 120 RATE 120
32445 32445 32445 32445	TUS TUS TUS	MS ME MS	END START PATH END START PATH END START	20 22 7000 22 7 6000 7	TASK TASK I TASK TASK 9 TASK TASK	10	6 6 6 6 6	JOB JOB 60013 JOB JOB 70001 JOB JOB	2 2 2 2 2 2	TI=706 TI=706 TI=706 TI=706	LENGTH 6 LENGTH 56 LENGTH	RATE 120 RATE 120 RATE
32445 32445 32445 32445 32445	TUS TUS TUS TUS	MS ME MS ME MS	END START PATH END START PATH END START PATI	20 22 7000 22 7 6000 7 11 6000	TASK TASK TASK TASK TASK TASK TASK TASK	10	6 6 6 6	JOB JOB 60013 JOB JOB 70001 JOB JOB	2 2 2 2 2	TI=706 TI=706 TI=706 TI=706	LENGTH 6 LENGTH 56 LENGTH 28	RATE 120 RATE 120
32445 32445 32445 32445 32445	TUS TUS TUS TUS TUS	MS ME MS ME MS ME	END START PATH END START PATH END START PATI PATI PATI LNI	20 22 7000 22 7 6000 7 11 6000	TASK TASK TASK TASK TASK TASK TASK TASK	10	6 6 6 6 6	JOB JOB 60013 JOB JOB 70001 JOB JOB JOB JOB	2 2 2 2 2 2 2	TI=706 TI=706 TI=706 TI=706	LENGTH 6 LENGTH 56 LENGTH 28	RATE 120 RATE 120 RATE 120
32445 32445 32445 32445 32445	TUS TUS TUS TUS TUS	MS ME MS ME MS ME	END START PATH END START PATH END START PATI PATI LNI START	20 22 7000 22 7 6000 7 11 6000 11 21	TASK TASK TASK TASK TASK TASK TASK TASK	10 10 10	6 6 6 6 6 6	JOB JOB 60013 JOB JOB 70001 JOB JOB JOB JOB	2 2 2 2 2 2 2 2 2	TI=706 TI=706 TI=706 TI=706 TI=706	LENGTH 56 LENGTH 28 LENGTH	RATE 120 RATE 120 RATE 120 RATE
32445 32445 32445 32445 32445 32445	TUS TUS TUS TUS TUS	MS ME MS ME MS ME MS	END START PATH END START PATH END START PATI L'NI START PATH	20 22 7000 22 7 6000 7 11 6000 11 21	TASK TASK TASK TASK TASK TASK TASK TASK	10	6 6 6 6 6	JOB JOB 60013 JOB JOB 70001 JOB JOB JOB JOB JOB	2 2 2 2 2 2 2 2	TI=706 TI=706 TI=706 TI=706 TI=706	LENGTH 56 LENGTH 28 LENGTH 28 LENGTH 14	RATE 120 RATE 120 RATE 120
32445 32445 32445 32445 32445 32445 32445	TUS TUS TUS TUS TUS TUS TUS	MS ME MS ME MS ME MS ME MS	END START PATH END START PATH END START PATI L'NI START PATH END	20 22 7000 22 7 6000 7 11 6000 11 21 6000 21	TASK TASK 1 TASK TASK 9 TASK TASK 9 TASK TASK 9	10 10 10	6 6 6 6 6 6	JOB JOB 60013 JOB JOB 70001 JOB JOB JOB 70001 JOB JOB	2 2 2 2 2 2 2 2 2	TI=706 TI=706 TI=706 TI=706 TI=706 TI=706	LENGTH 56 LENGTH 28 LENGTH 14	RATE 120 RATE 120 RATE 120 RATE 120
32445 32445 32445 32445 32445 32445 32445	TUS TUS TUS TUS TUS TUS TUS	MS ME MS ME MS ME MS ME MS	END START PATH END START PATH END START PATI L'NI START PATH	20 22 7000 22 7 6000 7 11 6000 11 21 6000 21 23	TASK TASK 1 TASK TASK 9 TASK TASK 9 TASK TASK 9	10 10 10	66 66 66 66 66	JOB JOB 60013 JOB JOB 70001 JOB JOB JOB JOB JOB	2 2 2 2 2 2 2 2 2 2 2 2	TI=706 TI=706 TI=706 TI=706 TI=706 TI=706 TI=706	LENGTH 56 LENGTH 28 LENGTH 14	RATE 120 RATE 120 RATE 120 RATE 120

32	445	TUS	ΜЕ		END	23	TASK		6	JOB	2	TI=706		
32	447	TUS	ΜE		END	28	TASK		7	JOB .	2	TI=707		
32	447	TUS	мЕ		END	29	TASK		7	JOB	2	TI=707		
		TUS			START	28	TASK		7	JOB	2	TI:≃707	LENGTH	RATE
-		'			PATH	7000	2	1		70001			256	120
-32	447	TUS	MS		START	29	TASK		7	JOB	2	TI=707	LENGTH	RATE
					PATH	7000	1	2		70002			256	120
32	449	TUS	MЕ		END	28	TASK		7	JO B	2	TI=707		
		TUS			END	29	TASK		7	JOB ·	2	TI=707		
32	449	TUS	T	E	END		TASK		7	JOB	2	TI=707		
-		TUS		X	EXECUT	ING	TASK		6	JOB	2	TI=706		
		TUS	T	E	END		TASK		6	JOB	2	TI=706		
		TUS		x	EXECUT	CING	TASK		9	JOB	2	TI=709		
		TUS	T		END		TASK		9	JOB	2	TI=709		
		TUS	-	X	EXECU?	CING	TASK		14	JOB		TI=714		
		TUS		X	EXECU?		TASK		11	JOB	2	TI=711		
		TUS	Ī		END		TASK		14	JOB	2	TI=714		
		TUS		_	START	32	TASK		11	JOB		TI=711	LENGTH	RATE
-					PATH	7000		24		60095			256	120
32	454	TUS	мв		END	32	TASK		11	JOB	2	TI=711		
		TUS			START	33	TASK		11	JOB		TI=711	LENGTH	RATE
					PATH	6009		24		70001			256	120
32	454	TUS	T	W	MSG WA		TASK		11	JOB	2	TI=711	_	
	•	TUS		x	EXECUT		TASK		34	JOB		TI=723		
		TUS	_		END	33	TASK		11	JOB	2	TI=711		
		TUS	T	I	INTER		TASK		34	JOB		TI=723		
_		TUS		x	EXECUT		TASK		11	JOB	2	TI=711		
		TUS	T		END		TASK		11	JOB	2	TT=711		
		TUS		x	EXECUT	ING	TASK		34	JOB	2	TI=723		
		TUS	T		END		TASK			JOB		TI=723		
		TUS		x	EXECUT	ING	TASK		35	JOB		TI=724		
		TUS	T		END		TASK		35	JOB		TI=724		
		TUS		x	EXECUT	TING	TASK		7	JOB		TI=707		
		TUS			START	58	TASK		7	JOB		TI=707	LENGTH	RATE
					PATH	7000		24		60095			512	120
32	481	TUS	MS		START	28	TASK		7	JOB	2	TI=707	LENGTH	RATE
					PATH	7000		1	•	70001			256	120
32	481	TUS	MS		START	29	TASK		7	JOB	2	TI=707	LENGTH	RATE
					PATH	7000		2	·	70004			256	120
32	483	TUS	M' E		END	28	TASK		7	JOB	2	TI=707		
		TUS			END	29	TASK		7	JOB	2	TI=707		
_		TUS	T	W	MSG WA		TASK		7	JOB	2	TI=707		
		TUS		X.	EXECU?		TASK		б	ĴОВ		TI=706		
			MS				TASK		6	JOB			LENGTH	RATE
	•				PATH	7000	1	13		60012			48	120
32	483	TUS	ΜE		END	51	TASK		6	JOB	2	TI=706		
32	483	THS	M E MS		START	54	TASK		6	JOB JOB	2	TI=706	LENGTH	RATE
					PATH	7000	17	10		60018		•	72	120
32	483	TUS	ΜE		END	54	TASK		6	JOB JOB 60011	2	TI#706		
32	483	TUS	MS		START	50	TASK		6	JOB	2	TI=706	LENGTH	PATE
					PATH	7000	1	12	•	60011			52	120
32	483	TUS	ME		END	50	TASK	~	6	JOB JOB	2	TI=706		
32	483	THS	M E MS		START	52	TASK TASK		6	JOB	2	TI=706	LENGTH	RATE
					PATH	7000	11	12		60011			4	120
32	483	THE	ΜE		END	52	TASK		6	JOB	2	TI=706	-	-
32	483	TUS	MS		START	53	TASK		6	JOB	2	TI=706	LENGTH	RATE
					PATH	7000	1	13	-	JOB JOB 60016	_		36	120
32	483	THS	ME		END	53	TASK		6	JOB	2	TI=706		
32	483	TUS	MS		START	8	TASK		6	60016 JOB JOB 60012	2	TI=706	LENGTH	RATE
					PATH	7000	1	13	_	60012			2	120

32483	TUS	MEMS MEMS MEMS MEMS MEMS MEMS MEMS MEMS	END	8	TASK		6	JOB	2	TI=706		
32483	TUS	MS	START	12	TASK		6	JOB	2	TI=706	LENGTH	RATE
			PATH	7000	1	10		60009		_	12	120
32483	TUS	ME	END	12	TASK		6	JOB	2	TI=706		
32483	TUS	MS	START	14	TASK		6	JOB	2	TI=706	LENGTH	RATE
00/00		3 - S	PATH	7000	T WACAT	ΤŢ	,	60010	0	mT706	10	120
32483	TUS	ME	END	14	TASK		6	JOB	2	TT=700	TUMOTU	יוויי א ס
32483	TUS	MS	PYME	7000	TASK	12	0	11009	2	11-/00	LENGIN 10	120
32483	THE	MR	END	16	ቸልፍድ ተ	12	6	JOB	2	TT=706	10	***0
32/83	THE	MS	START	18	TASK		6	JOB	2	TI=706	LENGTH	RATE
32403	,,,,,	110	PATH	7000	1	13	-	60012	_		2	120
32483	TUS	мЕ	END	18	TASK		6	JOB	2	TI=706		
32483	TUS	MS .	START	24	TASK		6	JOB	2	TI=706	LENGTH	RATE
			PATH	7000	1	13		60016			6	120
32483	TUS	M E	END	24	TASK		6	JOB	2	TI=706		
32483	TUS	MS	START	26	TASK		6	JOB	2	TI=706	LENGTH	RATE
			PATH	7000	1	11	_	60014	_	m= 304	2	120
32483	TUS	ME	END	26	TASK		6	JOB	2	T1=/06	T ENTORIS	DAME
32483	TUS	MS	START	7000	TASK	10	ь	JOR	4	TI=/06	LENGIR	120
22/02	mite	W E	PATH	7000	ጥለሮፓ 1	12	4	1UB 00011	2	TT-706	12	120
32403	TUS	M E	CHYLL	10	TACK		6	JOB	2	TT=706	LENGTH	RATE
J240J	TOO	Mo	PATH	7000	1	12	Ü	60011	_	14 700	2	120
32483	THS	ME	END	10	TASK		6	JOB	2	TI=706	_	
32483	TUS	MS	START	20	TASK		6	JOB	2	TI=706	LENGTH	RATE
			PATH	7000	1	12		60011			2	120
32483	TUS	ME	END	20	TASK		6	JOB	2	TI=706		
32483	TUS	MS	START	22	TASK		6	JOB	2	TI=706	LENGTH	RATE
			PATH	7000	1	12	_	60015	_		6	120
32483	TUS	ME	END	22	TASK		6	JOB.	2	TI=706	T 733.0011	n Amn
32483	TUS	MS	START	9	TASK	7.0	b	30001	2	TT=\00	LENGTH	RATE
22402	mtte	14 12	PATH	POOT	TIL TIL	1,5	ė	70001	2	T-706	24	120
32403	TUS	M E	CALV DAL	13	TASK		6	JOB	2	TT=706	T.ENGTH	RATE
32403	100	Mo	PATH	6000	Q	10	U	70001	-	11-100	32	120
32483	TUS	ме	END	13	TASK		6	JOB	2	TI=706	-	
32483	TUS	MS	START	15	TASK		6	JOB	2	TI=706	LENGTH	RATE
		_	PATH	6001	0	11		70001			34	120
32483	TUS	ME	END	15	TASK		6	JOB	2	TI=706		
32483	TUS	MS	STÅRT	17	TASK		6	JOB	2	TI=706	LENGTH	RATE
			PATH	6001	1	12		70001			30	120
32483	TUS	ME	END	17	TASK		6	JOB	2	TI=706	* P010011	n i mr
32483	TUS	MS	START	19	TASK	10	6	JUB	2	T1=/06	LENGIH 14	120
20100	mrrc	W 70	PATH	900T	2	13	,	70001 JOB	2	™T →706	14	120
32483	TUS	M E MS	START	25	TASK TASK		6	JOB	2	サエーフの6	T PMCTU	PATE
34403	109	MS	PATH	****	722014	13	-	70001	_	11-100	26	120
32483	THS	M E	END			13		JOB		TI=706		
		MS	START				6	JOB				RATE
5-1.00				6001		11		70001			12	120
32483	TUS	ME	END		TASK		6		2	TI=706		
32483	TUS	MS	START	7	TASK		6	JOB	2	TI=706	LENGTH	RATE
					.1	12		70001			56	120
		M E			TASK		6					
32483	TUS	MS			TASK		6	JOB				
00100	m	W D			1	12	,	70001	~	四年マウイ	28	120
32483			END		TASK		6	JOB	2	TI=706	ד שאורישיי	מתאם
32483	TUS	MS				12		JOB 70001	4	TT=100	LENGIA 14	120
			PATH	annī	. Т	12		10001			14	120

32483	TUS	ME	END	21	TASK		6	JOB JOB 70001 JOB JOB JOB	2	TI=706		
32483	TUS	MS	START	23	TASK		6	JOB	2	TI=706	LENGTH	RATE
			PATH	6001	5	12		70001 JOB JOB JOB JOB JOB 70001 JOB			18	120
32483	TUS	M E	END	23	TASK		6	JOB	2	TI=706		
32485	TUS	ME	END	58	TASK		7	JOB	2	TI=707		
32485	TUS	тх	EXECUT	ING	TASK		7	JOB	2	TI=707		
32485	TUS	MS	START	28	TASK		7	JOB	2	TI=707	LENGTH	RATE
			PATH	7000	3	1		70001			256	120
32485	TUS	MS	START	29	TASK		7	JOB	2	TI=707	LENGTH	RATE
			PATH	7000	1	. 2		JOB JOB 70001 JOB 70003 JOB JOB 70001 JOB JOB JOB JOB JOB JOB JOB JOB JOB JOB			256	120
32487	TUS	ME	END	28	TASK		7	JOB	2	TI=707		
32487	TUS	ME	END	29	TASK		7	JOB	2	TI=707		
32487	TUS	MS	START	28	TASK		7	JOB	2	TI=707	LENGTH	RATE
			PATH	7000	2	1		70001			256	120
32487	TUS	MS	START	29	TASK		7	JOB	2	TI=707	LENGTH	RATE
			PATH	7000	1	2		/0002			256	120
32489	TUS	ME	END	28	TASK		7	JOB	2	TI=707		
32489	TUS	ΜE	END	29	TASK		7	JOB	2	TI=707		
32489	TUS	T E	END		TASK		7	JOB	2	TI=707		
32489	TUS	тх	EXECUT	CING	TASK		6	JOB	2	тІ=706		
32490	TUS	MS	START	54	TASK		6	JOB	2	I=706	LENGTH	RATE
			PATH	7000	I	10		60017			72	120
32490	TUS	M E	END	54	TASK		6	JOB	2	TI=706		
32490	TUS	MS	START	50	TASK		6	JOB	2	TI=706	LENGTH	RATE
			PATH	7000	1	11		60010			52	120
32490	TUS	M E	END	50	TASK		6	JOB	2	TI=706		
32490	TUS	MS	START	52	TASK		6	JOB	2	TI=706	LENGTH	RATE
			PATH	7000	1	11		60010			4	120
32490	TUS	M E	END	57	TASK		6	JOB	2	TI=706		
32490	TUS	MS	START	53	TASK		6	JOB	2	TI=706	LENGTH	RATE
			PATH	7000	1	12		60015			36	120
32490	TUS	M E	END	53	TASK		6	JOB	2	TI=706		
32490	TUS	MS	START	26	TASK		6	JOB	2	TI=706	LENGTH	RATE
			PATH	7000	1	10		60013			2	120
32490	TUS	M E	END	26	TASK		6	JOB	2	TI=706		
32490	TUS	MS	START	6	TASK		6	JOB	2	TI=706	LENGTH	RATE
			PATH	7000	1	11	_	60010	_		12	120
32490	TUS	M.E	END	6	TASK		6	JOB	2	T1=706		4
32490	TUS	MS	START	10	TASK		6	JUB	2	TT=/00	LENGTH	RATE
		<u>:</u>	PATH	7000	11	11	_	60010		MT. 707	2	120
32490	TUE	ME	END	10	TASK		6	JOB	2	TT=/00	T DESCRIP	n Amir
32490	Tus	MS	START	20 7000	TASK	7.7	В	60010	Z	TT=\00	PENGIU	120
20100	m	1. B	PATH	7000	1	ТT	,	00010	2	mT_704	2	120
		M E	END		TASK		6		2	TI-700	I DMCTU	RATE
32490	TUS	MS	START			1 1	6	50g 60014				120
22400	muc	17 72	PATH	7000 22		11	6					140
32490 32490			END START				6	JOB			LENGTH	RATE
32490	1.02	MS	PATH	7000		10	o	60009		11-100	52	120
32490	THE	мъ	END		TASK	10	6	JOB		TT=706		120
32490							6	JOB				RATE
J449U	TOĐ	MO	START PATH	52 7000		10	u	60009			LENGIII	120
32490	TTTE	мв	END			10	6			TT=706		~
32490			START		TASK		6	JOB			LENGTH	RATE
J247U	TOD	LID	PATH	7000		11	,	60014		,00	36	120
37/00	THE	M E	END		TASK		6			TI=706		
32490			START				6	JOB				RATE
J447U	100	LID	PATH	6001		10	3	70001			12	120
32/00	THE	мЕ	END			10	6			TI=706	_	
24420	TOO	EL E	TATA	- 1	Aun		J	يوب	-	/00		

32490	TUS	MS			START	7	TASK		6	JOB 70001 JOB JOB 70001 JOB JOB JOB JOB JOB 60013 JOB 60009 JOB	2	TI=706	LENGTH	RATE
					PATH	600I	0	11		70001			56	120
32490	TUS	ΜE			END	7	TASK		6	JOB	2	TI=706		
32490	TUS	MS			START	11	TASK		6	JOB	2	TI=706	LENGTH	RATE
					PATH	6001	0	11		70001			28	120
32490	TUS	ΜE			END	11	TASK		6	JOB	2	TI=706		
32490	TUS	MS			START	21	TASK		6	JOB	2	TI=706	LENGTH	RATE
					PATH	6001	0	11		70001			14	120
32490	TUS	мЕ			END	21	TASK		6	JOB	2	TI=706		
32490	TUS	MS			START	23	TASK		6	JOB	2	TI=706	LENGTH	RATE
					PATH	6001	4	11		70001			18	120
32490	THS	МE			END	23	TASK		6	JOB	2	TI=706		
32490	THS	MS			START	53	TASK		6	JOB	2	TI=706	LENGTH	RATE
30,750					PATH	7000	1	10	_	60013			36	120
32490	THS	ME			END	53	TASK		6	JOB	2	TI=706	•	
32491	THS	MS			START	6	TASK		6	JOB	2	TI=706	LENGTH	RATE
J471	100				РАТН	7000	1	10	•	60009	_		12	120
37/01	THS	мЕ			END	6	TASK		6	JOB	2	TT=706		
32/91	TUS	MS			START	10	TASK		· 6	JOB	2	TT=706	LENGTH	RATE
J#771	100	110			PATH	7000	1	10	•	60009	_		2	120
32491	THE	ME			END	10	TASK		6	AOI.	2	TT=706	-	
32401	THE	MS.			START	20	TASK		ĸ	JOB	2	TT=706	LENGTH	RATE
32431	100	Ho			PATH	7000	1	10	•	60009	_	22 700	2	120
32401	THS	ME			END	20	TASK		6	JOR	2	TT=706	•	
32491	THE	MS			START	22	TASK		6	JOB	5	TT=706	LENGTH	RATE
J471	100	110			PATH	7000	1	10	•	60013	-	11 ,00	6	120
32491	THS	ME			END	22	TASK		6	JOR	2	TT=706	·	
32491	THE	MS			START	7	TASK		6	JOB	2	TT=706	LENGTH	RATE
J, .	100				PATH	6000	9	10	•	70001	Ī	,	56	120
32491	THS	ΜE			END	7	TASK		6	JOB	2	TT=706		
32491	THS	MS			START	11	TASK		6	JOB	2	TI=706	LENGTH	RATE
J 1, J-					PATH	6000	9	10	-	70001	Ī		28	120
32491	TUS	ME			END	11	TASK		6	JOB	2	TI=706		
32491	TUS	MS			START	21	TASK		6	JOB	2	TI=706	LENGTH	RATE
J~ 17 I					PATH	6000	9	10	•	70001			14	120
32491	THS	мЕ			END	-21	TASK		6	JOB	2	TI=706		
32491	THE	MS			START	23	TASK		6	JOB	2	TI=706	LENGTH	RATE
35471					PATH	6001	3	10	-	70001	_	,	18	120
32491	THS	ME			END	23	TASK		6	IOR	2	TI=706		
32491	TIIS	 Т	E		END		TASK		6	Jan B	2	TT=706		
32491	TUS	Ť	χ~		EXECU	CING	TASK		9	JOB	2	TI=709		
32494	THS	T	 F		END		TASK		9	JOR	2	TI=709		
32494	TUS	Ť	x		EXECUT	TNG	TASK		10	JOB	2	TI=710		
32501	THS	Ţ		Ι	INTER	RUPT	TASK		10	JOB	2	TI=710		
32501	THS	Ť	x	_	EXECIL	FING	TASK		11	JOB	2	TI=711		
7#74T		•	**								-			

APPENDIX D SUMMARY OUTPUT REPORTS

D-1

This appendix provides the statistical and control reports as specified in paragraph 5.2.6.1.

Statistical summaries for four different runs are given, viz.,

- for a 500 ms concentrated simulation run with specification NASA.SPECS10.DATA and jobschedule JSCA06. These printouts appear on pages D-2 through D-5.
- 2. for a 1.24-second flight-segmented simulation run with specification NASA. SPECSIO.DATA and jobschedule JSCAO7. These printouts appear on pages D-6 through D-9.
- 3. for a 1.10-second concentrated simulation run with specification NASA.SPECS10. DATA and jobschedule JSCA06. These printouts appear on pages D-10 through D-13.
- 4. for a 50 ms concentrated simulation run with specification NASA.SPECS20.DATA with four Virtual Machines and jobschedule JSCA08. These printouts appear on pages D-14 through D-17.

DURING 0.50 SECONDS OF SIMULATED SHUTTLE OPERATIONS A TOTAL OF 20 DIFFERENT FUNCTIONS WERE INTRODUCED. THESE FUNCTIONS WERE ACTIVATED 99 TIMES, STATUS IS:

95 WERE COMPLETED

16 ARE WAITING FOR NEXT ACTIVATION

3 ARE IN READY STATE, I.E. WAITING FOR CPU

O ARE WAITING FOR MESSAGES TO COMPLETE

1 PRESENTLY EXECUTING, I.E. IN ACTIVE STATE

FUNCTIONS WERE INTERRUPTED 33 TIMES.

O FUNCTION ACTIVATIONS WERE ABORTED AS FUNCTION STILL ACTIVE.

A TOTAL OF 822 MESSAGES WERE SUCCESSFULLY TRANSMITTED.

O WERE IN BURST MODE OVER MULTIPLEXED DATA LINKS

O TRANSMISSIONS WERE FOR LOADING OF MEMORIES

O TRANSMISSIONS WERE INTERRUPTED BECAUSE OF BURST MODE OPERATIONS OR KILLING OF TASKS

O SOURCE-DRIVEN MESSAGES WERE LOST DUE TO BACKLOGGING.

DEVICE 1, CLASS		1, WAS INVOLVED IN	5	TRANSMISSIONS.
AVERAGING	8	MS. UTILIZATION WAS	7	PERCENT.
DEVICE 2, CLASS		1. WAS INVOLVED IN	5	TRANSMISSIONS.
AVERAGING	8	MS. UTILIZATION WAS	7	PERCENT.
DEVICE 3, CLASS		1, WAS INVOLVED IN	5	TRANSMISSIONS.
AVERAGING	8	MS. UTILIZATION WAS	7	PERCENT.
DEVICE 9, CLASS		1, WAS INVOLVED IN	130	TRANSMISSIONS,
AVERAGING	0	MS. UTILIZATION WAS	0	-
DEVICE 10, CLASS		1, WAS INVOLVED IN	130	TRANSMISSIONS,
AVERAGING	0	MS. UTILIZATION WAS	0	PERCENT.
DEVICE 1., CLASS		1, WAS INVOLVED IN	130	TRANSMISSIONS,
AVERAGING	0	MS. UTILIZATION WAS	0	PERCENT.
DEVICE 12, CLASS		1, WAS INVOLVED IN	65	TRANSMISSIONS,
AVERAGING	0	MS. UTILIZATION WAS	0	PERCENT.
DEVICE 13, CLASS	*	1, WAS INVOLVED IN	65	TRANSMISSIONS,
AVERAGING	0	MS. UTILIZATION WAS	0	PERCENT.
DEVICE 14, CLASS		1, WAS INVOLVED IN	65	TRANSMISSIONS,
AVERAGING	0	MS. UTILIZATION WAS	0	PERCENT.
DEVICE 15, CLASS		1, WAS INVOLVED IN	39	TRANSMISSIONS,
AVERAGING	0	MS. UTILIZATION WAS	0	PERCENT.
DEVICE 16, CLASS		1, WAS INVOLVED 'IN	39	TRANSMISSIONS,
AVERAGING	0	MS. UTILIZATION WAS	0	PERCENT.
DEVICE 17, CLASS		l, was involved in	13	TRANSMISSIONS,
AVERAGING	0	MS. UTILIZATION WAS	0	PERCENT.
DEVICE 18, CLASS		1, WAS INVOLVED IN	13	TRANSMISSIONS,
AVERAGING	0	MS. UTILIZATION WAS	0	PERCENT.
DEVICE 27, CLASS		 WAS INVOLVED IN 	7	TRANSMISSIONS,
AVERAGING	11	MS. UTILIZATION WAS	15	PERCENT.
DEVICE 95, CLASS		1, WAS INVOLVED IN	33	TRANSMISSIONS,
AVERACING	2.	79MS. UTILIZATION WAS	18	PERCENT.

MEMORY 1, SIZE 125 PAGES, HELD AN AVERAGE OF 3 PAGES, WITH A MAXIMUM OF 3 PAGES. THE POTENTIAL TRANSMISSION RATE IS 1399 CH/MS. THE MAXIMUM ACHIEVED RATE WAS 720 CH/MS, AND THE AVERAGE RATE WAS 1.36CH/MS.

MEMORY 2, SIZE 125 PAGES, HELD AN AVERAGE OF 0 PAGES,
WITH A MAXIMUM OF 0 PAGES. THE POTENTIAL TRANSMISSION RATE
IS 1399 CH/MS. THE MAXIMUM ACHIEVED RATE WAS 240
CH/MS, AND THE AVERAGE RATE WAS 0.19CH/MS.

MEMORY 3, SIZE 125 PAGES, HELD AN AVERAGE OF 0 PAGES, WITH A MAXIMUM OF 0 PAGES. THE POTENTIAL TRANSMISSION RATE IS 1399 CH/MS. THE MAXIMUM ACHIEVED RATE WAS 240

ONIGINAL' PAGE IS OF POOR QUALITY CH/MS, AND THE AVERAGE RATE WAS 0.19CH/MS. 4, SIZE 125 PAGES, HELD AN AVERAGE OF 0 PAGES. WITH A MAXIMUM OF 0 PAGES. THE POTENTIAL TRANSMISSION RATE IS 1399 CH/MS. THE MAXIMUM ACHIEVED RATE WAS 240 CH/MS, AND THE AVERAGE RATE WAS 0.19CH/MS.

1, WAS USED 175 TIMES FOR PROCESSOR 1, V.M. A TOTAL OF 388 MS. UTILIZATION WAS 77 PERCENT.

1 WAS INVOLVED IN 2 MS. UTILIZATION WAS 15 PERCENT. POTENTIAL TRANSMISSION RATE IS DATA LINK 2 WAS INVOLVED IN 39 TRANSMI 2 MS. UTILIZATION WAS 15 PERCENT.

POTENTIAL TRANSMISSION RATE IS DATA LINK 6 WAS INVOLVED IN 8 MS. UTILIZATION WAS

POTENTIAL TRANSMISSION RATE IS

DATA LINK 7 WAS INVOLVED IN 8 MS. UTILIZATION WAS POTENTIAL TRANSMISSION RATE IS

8 WAS INVOLVED IN 8 MS. UTILIZATION WAS POTENTIAL TRANSMISSION RATE IS

DATA LINK 10 WAS INVOLVED 1N 0 MS. UTILIZATION WAS POTENTIAL TRANSMISSION RATE IS

DATA LINK 11 WAS INVOLVED IN 0 MS. UTILIZATION WAS POTENTIAL TRANSMISSION RATE IS

DATA LINK 12 WAS INVOLVED IN O MS. UTILIZATION WAS

POTENTIAL TRANSMISSION RATE IS

DATA LINK 13 WAS INVOLVED IN 0 MS. UTILIZATION WAS POTENTIAL TRANSMISSION RATE IS

DATA LINK 24 WAS INVOLVED IN 2.79MS. UTILIZATION WAS 18 PERCENT.

POTENTIAL TRANSMISSION RATE IS

39 TRANSMISSIONS, AVERAGING

120 CH/MS.

39 TRANSMISSIONS, AVERAGING

120 CH/MS.

5 TRANSMISSIONS, AVERAGING 7 PERCENT.

120 CH/MS.

5 TRANSMISSIONS, AVERAGING 7 PERCENT.

120 CH/MS.

5 TRANSMISSIONS, AVERAGING

7 PERCENT.

120 CH/MS.

221 TRANSMISSIONS, AVERAGING

O PERCENT.

120 CH/MS.

195 TRANSMISSIONS, AVERAGING

O PERCENT.

120 CH/MS.

169 TRANSMISSIONS, AVERAGANG

O PERCENT.

120 CH/MS.

104 TRANSMISSIONS, AVERAGING

O PERCENT.

CH/MS. 120

33 TRANSMISSIONS, AVERAGING

120 CH/MS.

DATA SET 1, ON STORAGE UNIT 1, AVERAGED 10000 CH, AND REACHED A MAXIMUM OF 10000 CH. DATA SET 2, ON STORAGE UNIT 10240 CH, AND REACHED 1, AVERAGED

A MAXIMUM OF 10240 CH.

KEY BLOCKS -

		-BACKLOG		AVERAGE DEL	AY (MS)	TIME
BLOCK	MAXIMUM	AVERAGE	CURRENT	ALL D	ELAYED	32.50SEC.
1138	n	n	0	0	0	
1151	20	0	0	4	4	
1182	2	0	0	2.50	2.50	
1184	1	0.01	0	1.73	0	
1185	1	0	0	0	0	
1192	1	0	1	2.43	2.43	
1201	20	0.87	20	0	0	
1204	1	0	0	1	0	
1488	0	0	0	0	0	
1495	0	0	0	0	0	
1601	1	0	0	0	0	
1605	23	0.02	4	2.75	0	
1608	1	0	0	0	O O	
1675	2	0	0	0.03	0	
1682	1	0	0	0	0	
1686	1	0	0	0	0	
1693	0	0	0	0	0	
1706	0	0	0	0	0	

ORIGINAL' PAGE IS OF POOR QUALITY

KEY BLO	CKS - (CO	NT'D)				
		-BACKLOG		AVERAGE DE	LAY (MS)	TIME
BLOCK	MAXIMUM	AVERAGE	CURRENT	ALL	DELAYED	32.50SEC.
1707	0	0	0	0	0	
1708	1	0	0	0	0	
1712	1	O	0	Ó	0	
1734	0	0	0	Ó	0	
1738	1	0	0	0	0	
1748	1	0	0	0	0	
1751	1	0	0	0	0	
1753	1	0	0	0	0	
1754	6	0.01	0	0.53	0	
1808	0	0	0	0	0	
1846	5	0	0	0.43	0	
1847	0	0	0	0	0	
1851	0	0	0	0	0	
1935	0	0	0	0	0	
1936	0	0	O	0	0	
3004	0	0	0	0	0	
3005	0	0	0	0	0	
3032	19	0.04	3	10.15	11.02	
3089	1	0	0	0	0	
6002	0	0	0	0	0	
8005	0	0	0	0	0	
9052	2	0	0	U.01	0	
11052	0	0	0	0	0	

SUMMARY F	FOR TIME	32501 , RELA	ATIVE TIME CONTENTS-	32501	NUMBER	AVERAGE PERIOD
STORAGE	CAPACITY	CURRENT	MAXIMUM	AVERAGE	WITHDRAWN	ALL UNITS
1	10000	10000	10000	10000.00	0	16250.49
2	10240	10240	10240	10240.00	0	16250.50
111	125	. 3	3	3.00	0	16250.00
112	125	0	0	0.00	0	0.00
113	125	0	0	0.00	0	0.00
114	125	0	0	0.00	0	0.00
131	1399	0	720	1.36	97807	0.45
132	1399	0	240	0.19	3120	2.00
133	1399	0	240	0.19	3120	2.00
134	1399	0	240	0.19	3120	2.00
151	17000000	20240	20240	20240.00	0	16250.50
152	17000000	0	0	0.00	0	0.00

SUMMARY FO	R TIME 32	2501 , RELATI	VE TIME	325	01		
	PERCENTAGE	NUMBER OF	AVERAGE	PERIOD	CURRENT	CURRENT	NUMBER
FACILITY	UTILIZATION	TIMES USED	PER	USE	PRIORITY	RECOURSE	SHELVED
11	1.19	175		2.22	25	2000	
81u	0.12	10		4.00			
82U	0.12	10		4.00			
83U	0.12	10		4.00			
89u	0.00	260		0.00			
90V	0.00	260		0.00			
91v	0.00	260		0.00			
92 u	0.00	130		0.00			
93ប	0.00	130		0.00			
94U	0.00	130		0.00			
950	0.00	78		0.00			
96U	0.00	78		0.00			
97U	0.00	26		0.00			
98U	0.00	26		0.00			

SUMMARY	FOR TIME 3. PERCENTAGE	2501 , RELATIV	VE TIME AVERAGE	3250			
FACILITY		TIMES USED			CURRENT PRIORITY	CURRENT RECOURSE	NUMBER
1070	0,24	14		5.50		TOTOGOTOD	OMERADO
175U	0.28	66		1.39			
1810	0.24	39		2.00			
182U	0.24	39		2.00		•	
186U	0.12	5		8.00			
187U	0.12	5		8.00			
188U	0.12	5		8.00			
190u	0.00	221		0.00			
191U	0,00	195		0.00			
1920	0.00	169		0.00			
193U	0.00	104		0.00			
2040	0.28	33		2.79			
CHERE	NT TRANSACTION (COLINT	146				
	UM NUMBER OF TR		223				
	D OR MOV OBERAM		2200				

NUMBER OF TRY OPERATIONS 132809 NUMBER OF TRANSACTION MOVES 394561 NUMBER OF VARIABLE EVALUATIONS 612316 MAXIMUM VARIABLE RECURSION 907770 NUMBER OF ADMIT ATTEMPTS NUMBER OF FUNCTION POINTS 1144 MOST RECENT BLOCK ID 3032 NUMBER OF BLOCK SPACES USED 1917 91 NUMBER OF REPORT LINES NUMBER OF VARIABLE ELEMENTS 1126 CURRENT UTILIZATION OF STACKS 846

> DRIGINAL PAGE IS OF POOR QUALITY

1.24 SECONDS OF SIMULATED SHUTTLE OPERATIONS DURING A TOTAL OF 20 DIFFERENT FUNCTIONS WERE INTRODUCED. THESE FUNCTIONS WERE ACTIVATED 196 TIMES, STATUS IS: 193 WERE COMPLETED

- 17 ARE WAITING FOR NEXT ACTIVATION
- I ARE IN READY STATE, I.E. WAITING FOR CPU
- 1 ARE WAITING FOR MESSAGES TO COMPLETE
- 1 PRESENTLY EXECUTING, I.E. IN ACTIVE STATE FUNCTIONS WERE INTERRUPTED 63 TIMES.

O FUNCTION ACTIVATIONS WERE ABORTED AS FUNCTION STILL ACTIVE.

A TOTAL OF 2001 MESSAGES WERE SUCCESSFULLY TRANSMITTED.

- O WERE IN BURST MODE OVER MULTIPLEXED DATA LINKS
- O TRANSMISSIONS WERE FOR LOADING OF MEMORIES
- O TRANSMISSIONS WERE INTERRUPTED BECAUSE OF BURST MODE OPERATIONS OR KILLING OF TASKS
- O SOURCE-DRIVEN MESSAGES WERE LOST DUE TO BACKLOGGING.

DEVICE 1, CLASS		1, WAS INVOLVED IN	13	TRANSMISSIONS,
AVERAGING	8	MS. UTILIZATION WAS	8	PERCENT.
DEVICE 2, CLASS		 WAS INVOLVED IN 	13	TRANSMISSIONS,
AVERAGING	8	MS. UTILIZATION WAS	8	PERCENT.
DEVICE 3, CLASS		1, WAS INVOLVED IN	13	TRANSMISSIONS,
AVERAGING	8	MS. UTILIZATION WAS	8	PERCENT.
DEVICE 9, CLASS		1, WAS INVOLVED IN	314	TRANSMISSIONS,
AVERAGING	0	MS. UTILIZATION WAS	0	PERCENT.
DEVICE 10, CLASS		1, WAS INVOLVED IN	319	TRANSMISSIONS,
AVERAGING	0	MS. UTILIZATION WAS	0	PERCENT.
DEVICE 11, CLASS		1, WAS INVOLVED IN	320	TRANSMISSIONS,
AVERAGING	0	MS. UTILIZATION WAS	0	PERCENT.
DEVICE 12, CLASS		I, WAS INVOLVED IN	160	TRANSMISSIONS,
AVERAGING	0	MS. UTILIZATION WAS	0	PERCENT.
DEVICE 13, CLASS		1, WAS INVOLVED IN	157	TRANSMISSIONS,
AVERAGING	0	MS. UTILIZATION WAS	0	PERCENT.
DEVICE 14, CLASS		I, WAS INVOLVED IN	159	TRANSMISSIONS,
AVERAGING	0	MS. UTILIZATION WAS	0	PERCENT.
DEVICE 15, CLASS		1, WAS INVOLVED IN	96	TRANSMISSIONS,
AVERAGING	0	MS. UTILIZATION WAS	0	PERCENT.
DEVICE 16, CLASS		1, WAS INVOLVED IN	96	TRANSMISSIONS,
AVERAGING	0	MS. UTILIZATION WAS	0	PERCENT.
DEVICE 17, CLASS		 WAS INVOLVED IN 	32	TRANSMISSIONS,
AVERAGING	O	MS. UTILIZATION WAS	0	PERCENT.
DEVICE 18, CLASS		 WAS INVOLVED IN 	32	TRANSMISSIONS,
AVERAGING	0	MS. UTILIZATION WAS	0	PERCENT.
DEVICE 27, CLASS		I, WAS INVOLVED IN	8	TRANSMISSIONS,
AVERAGING	11	MS. UTILIZATION WAS	7	PERCENT.
DEVICE 95, CLASS			82	TRANSMISSIONS,
AVERAGING	2.	79:15. UTILIZATION WAS	18	PERCENT.

MEMORY 1, SIZE 125 PAGES, HELD AN AVERAGE OF 3 PAGES, WITH A MAXIMUM OF 3 PAGES, HELD AN AVERAGE UP 3 PAGES,
WITH A MAXIMUM OF 3 PAGES. THE POTENTIAL TRANSMISSION RATE
IS 1400 CH/MS. THE MAXIMUM ACHIEVED RATE WAS 720
CH/MS, AND THE AVERAGE RATE WAS 3.3ICH/MS.
MEMORY 2, SIZE 125 PAGES, HELD AN AVERAGE OF 0 PAGES,
WITH A MAXIMUM OF 0 PAGES. THE POTENTIAL TRANSMISSION RATE
IS 1400 CH/MS. THE MAXIMUM ACHIEVED RATE WAS 240
CH/MS AND THE AVERAGE PATE WAS 0 ASCHIME

CH/MS, AND THE AVERAGE RATE WAS 0.45CH/MS. ()

MEMORY 3, SIZE 125 PAGES, HELD AN AVERAGE OF 0 PAGES,
WITH A MAXIMUM OF 0 PAGES. THE POTENTIAL TRANSMISSION RATE
IS 1400 CH/MS. THE MAXIMUM ACHIEVED RATE WAS 240
CF/MS, AND THE AVERAGE RATE WAS 0.45CH/MS.

MEMORY 4, SIZE 125 PAGES, HELD AN AVERAGE OF 0 PAGES,
WITH A MAXIMUM OF 0 PAGES. THE POTENTIAL TRANSMISSION RATE
IS 1400 CH/MS. THE MAXIMUM ACHIEVED RATE WAS 240
CH/MS, AND THE AVERAGE RATE WAS 0.46CH/MS.

PROCESSOR 1, V.M. 1, WAS USED 337 TIMES FOR A TOTAL OF 879 MS. UTILIZATION WAS 70 PERCENT.

1 WAS INVOLVED IN 94 TRANSMISSIONS, AVERAGING 2 MS. UTILIZATION WAS 15 PERCENT. POTENTIAL TRANSMISSION RATE IS 120 CH/MS. DATA LINK 2 WAS INVOLVED IN 94 TRANSMIS
2 MS. UTILIZATION WAS 15 PERCENT. 94 TRANSMISSIONS, AVERAGING POTENTIAL TRANSMISSION RATE IS 120 CH/MS. DATA LINK 6 WAS INVOLVED IN 8 MS, UTILIZATION WAS 13 TRANSMISSIONS, AVERAGING 8 PERCENT. POTENTIAL TRANSMISSION RATE IS 120 CH/MS. DATA LINK 7 WAS INVOLVED IN 8 MS. UTILIZATION WAS 13 TRANSMISSIONS, AVERAGING 8 PERCENT. POTENTIAL TRANSMISSION RATE IS 120 CH/MS. DATA LINK 8 WAS INVOLVED IN 8 MS. UTILIZATION WAS 13 TRANSMISSIONS, AVERAGING 8 PERCENT. POTENTIAL TRANSMISSION RATE IS 120 CH/MS. DATA LINK 10 WAS INVOLVED IN 0 MS. UTILIZATION WAS 535 TRANSMISSIONS, AVERAGING O PERCENT. POTENTIAL TRANSMISSION RATE IS 120 CH/MS. DATA LINK 11 WAS INVOLVED IN 0 MS. UTILIZATION WAS 478 TRANSMISSIONS, AVERAGING O PERCENT. POTENTIAL TRANSMISSION RATE IS 120 CH/MS. DATA LINK 12 WAS INVOLVED IN 0 MS. UTILIZATION WAS 416 TRANSMISSIONS, AVERAGING O PERCENT. POTENTIAL TRANSMISSION RATE IS 120 CH/MS. DATA LINK 13 WAS INVOLVED IN 0 MS. UTILIZATION WAS 256 TRANSMISSIONS, AVERAGING O PERCENT. POTENTIAL TRANSMISSION RATE IS 120 CH/MS. DATA LINK 24 WAS INVOLVED IN 82 TRANSMISSIONS, AVERAGING

DATA SET 1, ON STORAGE UNIT 1, AVERAGED 10000 CH, AND REACHED A MAXIMUM OF 10000 CH.

DATA SET 2, ON STORAGE UNIT 1, AVERAGED 10240 CH, AND REACHED A MAXIMUM OF 10240 CH.

CH/MS.

120

2.77MS. UTILIZATION WAS 18 PERCENT.

POTENTIAL TRANSMISSION RATE IS

ORIGINAL PAGE IS OF POOR QUALITY

KEY BLO	CKS -					
		-BACKLOG		AVERAGE DE	LAY (MS)	TIME
BLOCK	MUMIKAM	AVERAGE	CURRENT	ALL	DELAYED	33.24SEC.
1138	0	0	0	0	0	
1151	20	0	0	4	4	
1182	2	0	0	2.19	2.19	
1184	1	0.02	0	1.91	0	
1185	1	0	0	0	0	
1192	1	0 01	1	2.50	2.50	
1201	20	1.29	20	0	0	
1204	1	0	0	1	0	
1488	0	0	O	0	0	
1495	0	0	0	0	0	
1601	1	0	0	0	ΰ	
1605	23	0.06	0	2.68	0	
1608	1	0	0	0	G	
1675	. 2	0	0	0.01	0	
1682	1	0	0	0	0	
1686	1	0	0	0	0	
1693	0	0	0	0	0	
1706	0	0	0	0	0	
1707	0	0	0	0	0	
1708	1	Ō	0	0	0	
1712	1	0	0	Ō	0	
1734	0	0	0	0	0	
1738	1	0	0	Ō	0	
1748	1	0	0	0	0	
1751	1	0	0	0	0	
1753 1754	1	0	0	0	0	
1808	6 0	0.03	1	0.50	0	
1846	5	0 0.01	0 4	0	0	
1847	0	0.01		0.43	0	
1851	0	0 .	0	0	0	
1935	0	0	0	0	0	
1936	0	0	0	0	0 0	
3004	0	0	0	0	0	
3005	Ö	Ö	Ö	0	0	
3032	19	0.06	1	9.15	10.05	
3089	1	0.00	0	. 0	0	
6002	ō	Ö	0	0	0	
8005	ŏ	ő	Ö	0	0	
9052	2	ő	0	Ö	0	
11052	õ	ő	. 0	ő	0	
	~	_	•	~	- G	

SUMMARY F	OR TIME		VE TIME CONTENTS	33244	-	NUMBER	AVERAGE PERIOD
STORAGE	CAPACITY		MAXIMUM	AVERAC		THDRAWN	ALL UNITS
1	10000	10000	10000	10000.0	00	0	16622.00
2	10240	10240	10240	10240.0	00	0	16622.00
111	125	3	3	3.0	DÒ CO	0	16621.50
112	125	0	0	0.0	00	0	0.00
113	125	0	0	0-0	00	0	0.00
114	125	0	0	0.0	00	0	0.00
131	1400	120	720	3.3	31 23	9168	0.46
132	1400	0	240	0.4	45	7440	2.00
133	1400	0	240	0.4	45	7440	2.00
134	1400	0	240	0.4	46	7680	2.00
151	17000000	20240	20240	20240.0	00	0	16622.00
152	17000000	0	0	0.0	00	0	0.00
	PERCENTAGE	NUMBER OF	AVERAGE		CURRENT	CURRENT	NUMBER
FACILITY	UTILIZATION	TIMES USED	PER	USE F	PRIORITY	RECOURSE	SHELVED

	PERCENTAGE	NUMBER OF	AVERAGE PERIOD	CURRENT	CURRENT NUMBER
FACILITY	UTILIZATION	TIMES USED	PER USE	PRIORITY	RECOURSE SHELVED
II	2.64	337	2.61	28	2000
81U	0.31	26	4.00		
82U	0.31	26	4.00		
83U	0.31	26	4.00		
89U	0.00	628	0.00		
9 0 U	0.00	638	0.00		
910	0.00	640	0.00		
92U	0.00	320	0.00		
93U	0.00	314	0.00		
94U	0.00	318	0.00		
95U	0.00	192	ນ.00		
960	0.00	192	9.00		
97U	0.00	64	0.00		
980	0.00	64	0.00		
107U	0.26	16	5.50		
175U	0.68	· 163	1.39	52	
181U	0.57	94	2.00		
182U	0.57	94	2.00		
186U	0.31	13	8.00		
187U	0.31	13	8.00		
188U	0.31	13	8.00		
190U	0.00	535 ·	0.00		
191U	0.00	478	0.00		
192U	0.00	416	0.00		
193U	0.00	256	0.00		
204บ	0.68	. 82	2.77	52	9002

CURRENT TRANSACTION COUNT 148 MAXIMUM NUMBER OF TRANSACTIONS NUMBER OF TRY OPERATIONS NUMBER OF TRANSACTION MOVES 223 255171 797804 NUMBER OF VARIABLE EVALUATIONS 1163262 MAXIMUM VARIABLE RECURSION 1668396 NUMBER OF ADMIT ATTEMPTS NUMBER OF FUNCTION POINTS 1144 MOST RECENT BLOCK ID 8021 NUMBER OF BLOCK SPACES USED 1917 NUMBER OF REPORT LINES 92 NUMBER OF VARIABLE ELEMENTS 1126 CURRENT UTILIZATION OF STACKS 1290

1.10 SECONDS OF SIMULATED SHUTTLE OPERATIONS A TOTAL OF 20 DIFFERENT FUNCTIONS WERE INTRODUCED. 184 TIMES, STATUS IS: THESE FUNCTIONS WERE ACTIVATED

182 WERE COMPLETED

18 ARE WAITING FOR NEXT ACTIVATION

1 ARE IN READY STATE, I.E. WAITING FOR CPU O ARE WAITING FOR MESSAGES TO COMPLETE

1 PRESENTLY EXECUTING, I.E. IN ACTIVE STATE

FUNCTIONS WERE INTERRUPTED 60 TIMES.

1 FUNCTION ACTIVATIONS WERE ABORTED AS FUNCTION STILL ACTIVE.

A TOTAL OF 1448 MESSAGES WERE SUCCESSFULLY TRANSMITTED.

O WERE IN BURST MODE OVER MULTIPLEXED DATA LINKS

O TRANSMISSIONS WERE FOR LOADING OF MEMORIES

O TRANSMISSIONS WERE INTERRUPTED BECAUSE OF BURST MODE OPERATIONS OR KILLING OF TASKS

O SOURCE-DRIVEN MESSAGES WERE LOST DUE TO BACKLOGGING.

DEVICE 1	CLASS		1, WAS	INVOLVED	IN	11	TRANSMISSIONS
AVERAG:	ING	8	MS. U	TILIZATIO	N WAS	7	PERCENT.
DEVICE 2	CLASS		1, WAS	INVOLVED	IN	11	TRANSMISSIONS
AVERAG:	ING	8	MS. U	TILIZATIO	N WAS	7	PERCENT.
DEVICE 3	CLASS		1, WAS	INVOLVED	IN	11	TRANSMISSIONS
AVERAG:	in g	8	MS. U	TILIZATIO	N WAS	7	PERCENT.
DEVICE 9	CLASS		I, WAS	INVOLVED	IN	220	TRANSMISSIONS
AVERAG:	ING	0	MS. U	TILIZATIO	N WAS	0	PERCENT.
DEVICE 10	CLASS		1, WAS	INVOLVED	IN	220	TRANSMISSIONS
AVERAG:		0	MS. U	TILIZATIO	N WAS	0	PERCENT.
DEVICE 11	CLASS		l, WAS	INVOLVED	IN	220	TRANSMISSIONS
AVERAG:	ENG	0	MS. U	TILIZATIO	n was	0	PERCENT.
DEVICE 12	, CLASS		1, WAS	INVOLVED	IN	110	TRANSMISSIONS
AVERAG:		0	MS. U	TILIZATIO	N WAS	0	PERCENT.
DEVICE 13	CLASS		1, WAS	INVOLVED	IN	110	TRANSMISSIONS
AVERAG:	ENG	0	MS. U	TILIZATIO	N WAS	0	PERCENT.
DEVICE 14	CLASS		1, WAS	INVOLVED	IN	110	TRANSMISSIONS
AVERAG:	ENG	0	MS. U	TILIZATIO	N WAS	0	PERCENT.
DEVICE 15	, CLASS		1, WAS	INVOLVED	IN	56	TRANSMISSIONS
AVERAG:	ING	0	MS. U	TILIZATIO	N WAS	0	PERCENT.
DEVICE 16	CLASS		1, WAS	INVOLVED	IN	66	TRANSMISSIONS
AVERAG:	ENG	0	MS. U	TILIZATIO	N WAS	O.	PERCENT.
DEVICE 17	, CLASS		1, WAS	INVOLVED	IN	22	TRANSMISSIONS
AVERAG:	ENG	0	MS. U	TILIZATIO	IN WAS	0	PERCENT.
DEVICE 18	CLASS		I, WAS	INVOLVED	IN (22	TRANSMISSIONS
AVERAG:	LNG	0	MS. U	TILIZATIO	N WAS	9	PERCENT.
DEVICE 27	, CLASS		1, WAS	INVOLVED) IN	9	TRANSMISSIONS
AVERAG	ING	11	MS. U	TILIZATIO	N WAS	8	PERCENT.
DEVICE 95	, CLASS		1, WAS	INVOLVED	IN	72	TRANSMISSIONS
AVERAG:		2.7	8MS. U	TILIZATIO	N WAS	18	PERCENT.

MEMORY 1, SIZE 125 PAGES, HELD AN AVERAGE OF WITH A MAXIMUM OF 3 PAGES. THE POTENTIAL TRANSMISSION RATE IS 1400 CH/MS. THE MAXIMUM ACHIEVED RATE WAS 720 CH/MS, AND THE AVERAGE RATE WAS 1.31CH/MS.

MEMORY 2, SIZE 125 PAGES, HELD AN AVERAGE OF MAXIMUM OF 0 PAGES. THE POTENTIAL TRANSMISSION RATE 1400 CH/MS. THE MAXIMUM ACHIEVED RATE WAS 240 WITH A MAXIMUM OF CH/MS, AND THE AVERAGE RATE WAS 0.18CH/MS.

125 PAGES, HELD AN AVERAGE OF MEMORY 3, SIZE O PAGES. WITH A MAXIMUM OF 0 PAGES. THE POTENTIAL TRANSMISSION RATE IS 1400 CH/MS. THE MAXIMUM ACHIEVED RATE WAS 240 CH/MS, AND THE AVERAGE RATE WAS 0.18CH/MS.

MEMORY 4, SIZE 125 PAGES, HELD AN AVERAGE OF O PAGES, WITH A MAXIMUM OF O PAGES. THE POTENTIAL TRANSMISSION RATE IS 1400 CH/MS. THE MAXIMUM ACHIEVED RATE WAS 240 CH/MS, AND THE AVERAGE RATE WAS 0.18CH/MS.

PROCESSOR 1, V.M. 1, WAS USED 318 TIMES FOR A TOTAL OF 741 MS. UTILIZATION WAS 67 PERCENT.

I WAS INVOLVED IN 84 TRANSMI: 2 MS. UTILIZATION WAS 15 PERCENT.

POTENTIAL TRANSMISSION RATE IS 120 CH/MS.

DATA LINK 2 WAS INVOLVED IE 64 TRANSPIL.
2 MS. UTILIZATION WAS 15 PERCENT.

POTENTIAL TRANSMISSION RATE IS DATA LINK 6 WAS INVOLVED IN 11 TRANSME. 8 MS. UTILIZATION WAS 7 PERCENT.

POTENTIAL TRANSMISSION RATE IS

DATA LINK 7 WAS INVOLVED IN 8 MS. UTILIZATION WAS POTENTIAL TRANSMISSION RATE IS

DATA LINK 8 WAS INVOLVED IN 8 MS. UTILIZATION WAS

POTENTIAL TRANSMISSION RATE IS

DATA LINK 10 WAS INVOLVED IN 374 TRANSMIS
0 MS. UTILIZATION WAS 0 PERCENT. POTENTIAL TRANSMISSION RATE IS

DATA LINK 11 WAS INVOLVED IN 0 MS. UTILIZATION WAS

POTENTIAL TRANSMISSION RATE IS

DATA LINK 12 WAS INVOLVED IN 0 MS. UTILIZATION WAS POTENTIAL TRANSMISSION RATE IS

DATA LINK 13 WAS INVOLVED IN 176 TRANSMISSIONS, AVERAGING 0 MS. UTILIZATION WAS 0 PERCENT.

POTENTIAL TRANSMISSION RATE IS DATA LINK 24 WAS INVOLVED IN .

2.78MS. UTILIBATION WAS 18 PERCENT. POTENTIAL TRANSMISSION RATE IS

84 TRANSMISSIONS, AVERAGING

84 TRANSMISSIONS, AVERAGING

120 CH/MS.

11 TRANSMISSIONS, AVERAGING

120 CH/MS.

11 TRANSMISSIONS, AVERAGING 7 PERCENT.

120 CH/MS.

11 TRANSMISSIONS, AVERAGING

7 PERCENT.

120 CH/MS.

374 TRANSMISSIONS, AVERAGING

120 CH/HS.

330 TRANSMISSIONS, AVERAGING

O PERCENT.

120 CH/MS.

286 TRANSMISSIONS, AVERAGING O PERCENT.

120 CH/MS.

120 CH/MS.

72 TRANSMISSIONS, AVERAGING

120 CH/MS.

DATA SET 1, ON STORAGE ENIT A MAXIMUM OF 10000 CH.

1, AVERAGED 10000 CH, AND REACHED

DATA SET 2, ON STORAGE UNIT A MAXIMUM OF 10240 CH.

CH, AND REACHED 1, AVERAGED 10240

ORIGINAL PAGE IS OF POOR QUALITY

KEY BLO	CKS -					
		-BACKLOG			DELAY (MS)	TIME
BLOCK	MAXIMUM	AVERAGE	CURRENT	ALL	DELAYED	73.10SEC.
1138	0	0	0	0	Ō	
1151	20	0	0	4	4	
1182	2	0	0	2.33		
1184	1	0.01	0	1.67		
1185	1	0	0	0	0	
1192	1	0	1	2.77		
1201	20	0.55	20	e	0	
1204	1	0	0	1	Ō	
1488	O.	0	0	0	0	
1495	0	0	0	0	0	
1601	1	0	0	G	0	
1605	23	0.02	4	2.69		
1608	1	0	0	0	0	
1675	2	0	Ç	0.03		
1682	1	0	C	Ů	0	
1686	. 1	0	0	0	Ō	
1693	. 0	0	0	G	0	
1706	0	0	0	0	0	
1707	O O	0	0	0	0	
1708	1	0	0	0	0	
1712	1	Ð	0	0	O.	
1734	0	0	0	Ĺ	0	
1738	1	0	0	0	43	
1748	1	0	0	0)	
1751	1	0	0	0	6	
1753	1	0	0	0	0	
1754	6	0.01	0	0.63		
1808	0	0	0	0	0	
1846	5	0	0	0.43		
1847	0	0	0	0	0	
1851	0	0 .	0	o	0	
1935	0	0	0	0	0	
1936	0	0	0	0	0	
3004	0	0	0	0	0	
3005	0	0	0	, 0	0	
3032	19	0.02	1	8.65		
3089	1	0	0	[*] 0	O	
6002	0	0	0	O	0	
8005	0	0	0	0	0	
9052	2	Ō	0	0.03		
11052	0	0	. 0	0	0	

73101 , RELATIVE TIME

SUMMARY FOR TIME

JOPEMAL P	OK TIME	(DIOI , MEDAI.		.77	U.	untnen	ATTENDADE APPLIAN
COOD LOT	GANAG7837		-CONTENTS-	AVER		NUMBER	AVERAGE PERIOD
STORAGE	CAPACITY		MAXIMUM	AVER	AGE W	ITHDRAWN	ALL UNITS
I	10000	10000	10000 10240 3	10000	•00	0	36550.50
	10240	10240	10240	10240	.00	0.	36550.50
111	125 125	3				0	36550.00
112		Q.	0		.00	0	0.00
113	125	0	0		.00	0	0.00
114	125	0	0		.00	0	0.00
131	1400	0	720			72689	0.56
132	1400	0	240			6720	2.00
133	1400	0	240 240		.18	6720	2.00
134	1400	0	240 20240		.18	6730	2.00
151	17000000	20240		20240		0	36550.50
152	17000000	0	0	0	.00	0	0.00
	PERCENTAGE	NUMBER OF	AVERAGE	PERIOD	CURRENT	CURRENT	NUMBER
FACILITY	UTILIZATION	TIMES USED 318	PER	USE	PRIORITY	RECOURSE	SHELVED
11	1.01	318		2.33	25	2000	•
81ប	0.12	22		4.00			
82 U	0.12	22		4.00			
83U	0.12	22		4.00			
89U	0.00	440		0.00			
90U	0.00	440		0.00			
910	0.00	440		0,00			
920	0.00	220		0.00			
930	0.00	220		0.00			
940	0.00	220		0.00			
95U	0.00	132		0.00			
96U	0.00	132		0.00			
97U	0.00	44		0.00			
98u	0.00	44		0.00			
107U	0.14	18		5.50			
175V	0.27	144		1.39			
1810	0.23	84		2.00			
1820	0.23	84		2.00			
186U	0.12	11		8.00			
1870	0.12	11		8.00			
188U	0.12	11		8.00			
1900	0.00	374		0.00			
191U	0.00	330		0.00			
1920	0.00	286		0.00			
193U	0.00	176		0.00			
204U	0.27	72		2.78			
CURREN	T TRANSACTION	COUNT RANSACTIONS TIONS ON MOVES	146 223 197939 615599				
NUMBER	OF VARIABLE	EVALUATIONS CURSION	893254				
		EMPTS 1	273129				
NUMBER	OF FUNCTION	POINTS	1144				
MOST R	ECENT BLOCK I	Ð	3032				
NUMBER	OF BLOCK SPA	CES USED	1917				
MITMRED.	OF PEROPE IT	MPC	ດາ				
NUMBER	OF VARIABLE	ELEMENTS	1126				
CURREN	T UTILIZATION	ELEMENTS OF STACKS	1242				
3						DRICE	· · · · · · · · · · · · · · · · · · ·
						65.27 CT 0.10 -2.3	LOCA Section 1

DRIGINAL PAGE IS DE POOR QUALITY

```
0.05 SECONDS OF SIMULATED SHUTTLE OPERATIONS
A TOTAL OF
              80 DIFFERENT FUNCTIONS WERE INTRODUCED.
                                  68 TIMES, STATUS IS:
THESE FUNCTIONS WERE ACTIVATED
          52 WERE COMPLETED
```

64 ARE WAITING FOR NEXT ACTIVATION

12 ARE IN READY STATE, I.E. WAITING FOR CPU O ARE WAITING FOR MESSAGES TO COMPLETE

4 PRESENTLY EXECUTING, I.E. IN ACTIVE STATE

11 TIMES. FUNCTIONS WERE INTERRUPTED

13 FUNCTION ACTIVATIONS WERE ABORTED AS FUNCTION STILL ACTIVE.

```
A TOTAL OF
             121 MESSAGES WERE SUCCESSFULLY TRANSMITTED.
```

- O WERE IN BURST MODE OVER MULTIPLEXED DATA LINKS
- O TRANSMISSIONS WERE FOR LOADING OF MEMORIES
- O TRANSMISSIONS WERE INTERRUPTED BECAUSE OF BURST MODE OPERATIONS OR KILLING OF TASKS
- O SOURCE-DRIVEN MESSAGES WERE LOST DUE TO BACKLOGGING.

DEVICE 1, CLASS 1, WAS INVOLVED IN 1 TRANSMISSIONS, AVERAGING 8 MS. UTILIZATION WAS 15 PERCENT. DEVICE 2, CLASS 1, WAS INVOLVED IN 1 TRANSMISSIONS, AVERAGING 8 MS. UTILIZATION WAS 15 PERCENT. DEVICE 3, CLASS 1, WAS INVOLVED IN 1 TRANSMISSIONS, AVERAGING 8 MS. UTILIZATION WAS 15 PERCENT. DEVICE 9, CLASS 1, WAS INVOLVED IN 20 TRANSMISSIONS,
DEVICE 2, CLASS 1, WAS INVOLVED IN 1 TRANSMISSIONS, AVERAGING 8 MS. UTILIZATION WAS 15 PERCENT. DEVICE 3, CLASS 1, WAS INVOLVED IN 1 TRANSMISSIONS, AVERAGING 8 MS. UTILIZATION WAS 15 PERCENT.
AVERAGING 8 MS. UTILIZATION WAS 15 PERCENT. DEVICE 3, CLASS 1, WAS INVOLVED IN 1 TRANSMISSIONS, AVERAGING 8 MS. UTILIZATION WAS 15 PERCENT.
DEVICE 3, CLASS 1, WAS INVOLVED IN 1 TRANSMISSIONS; AVERAGING 8 MS. UTILIZATION WAS 15 PERCENT.
AVERAGING 8 MS. UTILIZATION WAS 15 PERCENT.
DEVICE 9. CLASS 1. WAS INVOLVED IN 20 TRANSMISSIONS.
AVERAGING O MS. UTILIZATION WAS O PERCENT.
DEVICE 10, CLASS 1, WAS INVOLVED IN 20 TRANSMISSIONS,
AVERAGING O MS. UTILIZATION WAS O PERCENT.
DEVICE 11, CLASS 1, WAS INVOLVED IN 20 TRANSMISSIONS,
AVERAGING O MS. UTILIZATION WAS O PERCENT.
DEVICE 12, CLASS 1, WAS INVOLVED IN 10 TRANSMISSIONS,
AVERAGING O MS. UTILIZATION WAS O PERCENT.
DEVICE 13, CLASS 1, WAS INVOLVED IN 10 TRANSMISSIONS,
AVERACING O MS. UTILIZATION WAS O PERCENT.
DEVICE 14, CLASS 1, WAS INVOLVED IN 10 TRANSMISSIONS,
AVERAGING O MS. UTILIZATION WAS O PERCENT.
DEVICE 15, CLASS 1, WAS INVOLVED IN 6 TRANSMISSIONS,
AVERAGING O MS. UTILIZATION WAS O PERCENT.
DEVICE 16, CLASS I, WAS INVOLVED IN 6 TRANSMISSIONS,
AVERAGING O MS. UTILIZATION WAS O PERCENT.
DEVICE 17, CLASS 1, WAS INVOLVED IN 2 TRANSMISSIONS,
AVERAGING O MS. UTILIZATION WAS O PERCENT.
DEVICE 18, CLASS 1, WAS INVOLVED IN 2 TRANSMISSIONS,
AVERAGING O MS. UTILIZATION WAS O PERCENT.
DEVICE 27, CLASS 1, WAS INVOLVED IN 1 TRANSMISSIONS,
AVERAGING O MS. UTILIZATION WAS O PERCENT.
DEVICE 95, CLASS 1, WAS INVOLVED IN 4 TRANSMISSIONS,
AVERAGING 3 MS. UTILIZATION WAS 23 PERCENT.
MEMORY 1, SIZE 125 PAGES, HELD AN AVERAGE OF 3 PAGES,
WITH A MAXIMUM OF 3 PAGES. THE POTENTIAL TRANSMISSION RATE
IS 1399 CH/MS. THE MAXIMUM ACHIEVED RATE WAS 360
CH/MS, AND THE AVERAGE RATE WAS 0.07CH/MS.
MEMORY 2, SIZE 125 PAGES, HELD AN AVERAGE OF 3 PAGES,
WITH A MAXIMUM OF 3 PAGES. THE POTENTIAL TRANSMISSION RATE
IS 1309 CH/MS. THE MAXIMUM ACHIEVED RATE WAS 240
CH/MS, AND THE AVERAGE RATE WAS 0.01CH/MS.

3, SIZE 125 PAGES, HELD AN AVERAGE OF MEMORY WITH A MAXIMUM OF 3 PAGES. THE POTENTIAL TRANSMISSION RATE IS 1399 CH/MS. THE MAXIMUM ACHIEVED RATE WAS 240 CH/MS, AND THE AVERAGE RATE WAS 0.01CH/MS.

MEMORY 4, SIZE 125 PAGES, HELD AN AVERAGE OF WITH A MAXIMUM OF 3 FAGES. THE POTENTIAL TRANSMISSION RATE IS 1399 CH/MS. THE MAXIMUM ACHIEVED RATE WAS 240 CH/MS, AND THE AVERAGE RATE WAS 0.01CH/MS.

PROCESSOR 1, V.M. 1, WAS USED 22 TIMES FOR A TOTAL OF 49 MS. UTILIZATION WAS 97 PERCENT. PROCESSOR 2. V.M. 2, WAS USED 16 TIMES FOR A TOTAL OF 49 MS. UTILIZATION WAS 97 PERCENT. 3, WAS USED PROCESSOR 3, V.M. 16 TIMES FOR A TOTAL OF 49 MS. UTILIZATION WAS 97 PERCENT. PROCESSOR 4, V.M. 4, WAS USED 16 TIMES FOR A TOTAL OF 49 MS. UTILIZATION WAS 97 PERCENT.

1 WAS INVOLVED IN 2 MS. UTILIZATION WAS 7 PERCENT. POTENTIAL TRANSMISSION RATE IS DATA LINK 2 WAS INVOLVED IN 2 MS. UTILIZATION WAS

POTENTIAL TRANSMISSION RATE IS DATA LINK 3 WAS INVOLVED IN 2 MS. UTILIZATION WAS

POTENTIAL TRANSMISSION RATE IS DATA LINK 4 WAS INVOLVED IN 2 MS. UTILIZATION WAS

POTENTIAL TRANSMISSION RATE IS

6 WAS INVOLVED IN 1 TRANSMI 8 MS. UTILIZATION WAS 15 PERCENT. POTENTIAL TRANSMISSION RATE IS

7 WAS INVOLVED IN

8 MS. UTILIZATION WAS 15 PERCENT. POTENTIAL TRANSMISSION RATE IS

DATA LINK 8 WAS INVOLVED IN 1 TRANSMI 8 MS. UTILIZATION WAS 15 PERCENT. POTENTIAL TRANSMISSION RATE IS

DATA LINK 10 WAS INVOLVED IN .

0 MS. UTILIZATION WAS POTENTIAL TRANSMISSION RATE IS

DATA LINK 11 WAS INVOLVED IN 0 MS. UTILIZATION WAS POTENTIAL TRANSMISSION RATE IS

DATA LINK 12 WAS INVOLVED IN 0 MS. UTILIZATION WAS POTENTIAL TRANSMISSION RATE IS

DATA LINK 13 WAS INVOLVED IN 0 MS. UTILIZATION WAS

POTENTIAL TRANSMISSION RATE IS

24 WAS INVOLVED IN 4 TRANSMI 3 MS. UTILIZATION WAS 23 PERCENT. POTENTIAL TRANSMISSION RATE IS

2 TRANSMISSIONS, AVERAGING

120 CH/MS.

2 TRANSMISSIONS, AVERAGING 7 PERCENT.

120 CH/MS.

2 TRANSMISSIONS, AVERAGING 7 PERCENT.

120 CH/MS.

2 TRANSMISSIONS, AVERAGING 7 PERCENT.

120 CH/MS.

1 TRANSMISSIONS, AVERAGING

120 CH/MS.

1 TRANSMISSIONS, AVERAGING

120 CH/MS.

1 TRANSMISSIONS, AVERAGING

120 CH/MS.

34 TRANSMISSIONS, AVERAGING O PERCENT.

120 CH/MS.

30 TRANSMISSIONS, AVERAGING O PERCENT.

120 CUMS.

26 TRANSMISSIONS, AVERAGING O PERCENT.

120 CH/MS.

16 TRANSMISSIONS, AVERAGING O PERCENT.

120 CH/MS.

120 CH/MS.

4 TRANSMISSIONS, AVERAGING

DATA SET 1, ON STORAGE UNIT A MAXIMUM OF 10000 CH.

DATA SET 2, ON STORAGE UNIT A MAXIMUM OF 10240 CH.

1, AVERAGED 10000 CH, AND REACHED

 AVERAGED 10240 CH, AND REACHED

KEY BLO	CKS -					
		-BACKLOG		AVERAGE DE	LAY (MS)	TIME
BLOCK	MAXIMUM	AVERAGE	CURRENT	ALL	DELAYED	72.05SEC.
1138	0	0	0	0	0	
1151	80	0	0	4	4	
1182	1	0	0	2	2	
1184	4	0	4	2.82	0	
1185	1	O	0	. 0	0	
1192	1	0	0	1.33	1.33	
1201	80	0.06	80	0	0	
1204	0	0	0	0	0	
1488	0	0	0	0	0	
1495	0	0	0	0	0	
1601	1	0	0	0	0	
1605	21	0	0	3.77	0	
1608	I	0	0	0	0	
1675	1	0	0	0	0	
1682	1	0	O	0	0	
1686	1	0	C	0	0	
1693	0	0	0	0	0	
1706	0	0	0	0	0	
1707	0	0	0	0	0	,
1708	1	0	0	0	0	
1712	1	0	0	0	0	
1734	0	0	0	0	0	
1738	1	0	0	0	0	
1748	1	0	0	0	0	
1751	1	0	0	0	0	
1753	1	0	0	0	0	
1754	5	0	1	0.51	O	
1808	0	0	0	0	0	
1846	5	0	0	0.53	0	
1847	0	0	0	0	0	
1851	0	0	. 0	0	0	
1935	0	0	0	0	0	
1936	Đ	0	0	0	0	
3004	0	0	0	0	0	
3005	0	0	0	0	0	
3032	36	0.01	12	5.16	7.70	
3089	I	0	0	- 0	0	
6002	0	0	0	0	0	
8005	0	0	0	0	0	
9052	1	Ō	0	Ō	0	
11052	0	0	. 0	0	0	

SUMMARY	FOR TIME	72050 , RELAT	IVE TIME	720	50		
COLOR A COLOR	O A D A OT INV		-CONTENTS			NUMBER	AVERAGE PERIOD
STORAGE	CAPACITY	CURRENT	MAXIMUM	AVERA		THDRAWN	ALL UNITS
1 2	10000	10000	10000	10000		0	36025.00
	10240	10240	10240	10240		0	36025.00
111	125	3	3		.00	0	36024.50
112	125	3	3		.00	0	36024.50
113	125	3	3		.00	0	36024.50
114 131	125	3 1	3 3 3		.00	0	36024.50
131	1399 1399	Ô	360 240			4040	0.38
133	1399	0	240		.01	480	2.00
133	1399	0	240		.01 .01	480 480	2.00
151	17000000	20240	20240	20240		400 0	2.00
152	17000000	0	0		.00	0	36025,00
130	17000000	ŭ	Ū	•		J	0.00
	PERCENTAGE	NUMBER OF	AVERAGE	PER.	CURRENT	CURRENT	NUMBER
FACILITY	UTILIZATION	TIMES USED	PER	USE	YTIAOLTY.	RECOURSE	SHELVED
11	0.07	22		2,23	23	2000	
21	0.07	16		3.06	3	2000	
31	0.07	16		3.06	23	2000	
41	0.07	16		3.06	23	2000	
810	0.01	2		4.00			
820	0.01	2		4.00			
830	0.01	2		4.00			
890	0.00	40		0.00			
900	0.00	40		0.00			
910	0.00	40		0.00			
92U	0.00	20		0.00			
930	0.00	20		0.00			
94U	0.00	20		0.00			
95U	0.00	12		0.00			
96U 97U	0.00	12		0.00			
98U	0.00	4		0.00			
107U	0.00 0.00	4 1		0.00	60		
1750	0.02	8		0.00 1.50	52		
181U	0.01	2		2,00			
1820	0.01	2		2.00			
1830	0.01	2 .		2.00			
1840	0.01	2		2.00			
1860	0.01	ī		8.00			
1871	0.01	ī		8.00			
188U	0.01	. 1		8.00			
1900	0.00	34		0.00			
191U	0.00	30		0.00			
1920	0.00	26		0.00			
193U	0.00	16		0.00			
204U	0.02	4		3.00			
CURRENT TRANSACTION COUNT 509							
	UM NUMBER OF T		768				
NUMBER OF TRY OPERATIONS 696							
	NUMBER OF TRANSACTION MOVES 2:						•
NUMBER OF VARIABLE EVALUATIONS 500040							
MAXIMUM VARIABLE RECURSION 5 NUMBER OF ADMIT ATTEMPTS 654268							
	R OF ADMIT ATT	-	554268				
	RECENT BLOCK II		1152 1754				
	1918			F.D.S	ny mang any		
NUMBER OF BLOCK SPACES USED 1918 NUMBER OF REPORT LINES 96						1. 73.14	TUNAL PARTY -
NUMBER OF VARIABLE ELEMENTS 1129						心质 庚	THE MENT GOOD
	NT UTILIZATION		2607				FTVAU PAGE IS OOR QUALITY

APPENDIX E TERMS AND ABBRVIATIONS

A. A/D - Analog/Digital

ADI - Attitude Director Indicator ADTA - Air Data Transducer Assembly

ALT - Approach and Landing Test

AMI - Alpha/Mach Indicator

Auto - Automatic

Avg - Average

AVVI - Altitude Vertical Velocity Indicator

B. BCE - Bus Control Element

BF - Brake Flap

bps - bits per second

C. CAS - Command Augmentation System

CH/MS - Characters per Millisecond (Appendix D)

CPDS - Computer Program Development Specification

CRT - Cathode Ray Tube

DD - Dedicated Display

DDPS - Digital Data Processing System

DDU - Digital Display Unit

DEU - Display Electronic Unit

DFN - Discrete Function

DMA - Direct Memory Access

DU - Display Unit

F. FAO1 - Flight Aft Operational Instrumentation

FCOS - Flight Computer Operating System

FCS/DD - Flight Control System/Digital Data

FDI - Fault Detection and Identification

FDIR - Fault Detection Identification and Recovery

FFO1 - Flight Forward Operational Instrumentation

FSW - Flight Software

FSSR - Functional Subsystem Software Requirements

G. GPC- General -Purpose Computer

ICC - Inter-Computer Communication

IMSIM - Information Management System Interpretive Model

IMU - Inertial Measurement Unit

IOP - Input - Output Processor

I/O - Input/Output

K. KB - Keyboard

KBPS - Kilobits per second

KBU - Keyboard Unit

L. LDB - Launch Data Bus

MCDS - Multifunction CRT Display System

MDM - Multiplexer/Demultiplexer

M/D - Manual/Direct

M E - Message Ends (Appendix C)

MM - Mass Memory

MODLIT - SDC Discrete System Simulator

ms - millisecond

MS - Message Start (Appendix C)

MSC - Master Sequence Controller
MSC - Moding, Sequencing and Control

msg - message

MSBLS - Microwave Scan Beam Landing System

- NASA National Aeronautics and Space Administration
- OMS Orbiter Maneuvering Subsystem OPS - Operations or Operational Sequence OT - Operational Instrumentation
- PCMMU Pulse Code Modulator Master Unit PL - Payload
- RM-Nav Redundancy Management Navigation RM-Cont - Redundancy Management - Control
- S.D. Std. Deviation SDC - System Development Corporation S.M. - System Management S.O.W. - Statement of Work Spec - Specialist
- TACAN Tactical Air Navigation TAEM - Terminal Area Energy Management T E - Task Ends (Appendix C) TI - Task Interrupt (Appendix C) TOT - Total TS - Task Start (Appendix C TUS - Time Units (Appendix C) TVC - Thrust Vector Control T W - Task in Wait State (Appendix C)
- U. UI User Interface
- V. V Variable VIRT MACH - Virtual Machine (Appendix D) VM - Virtual Machine

T X - Task in Execution (Appendix C)

- WONG Weight on Nose Gear
- X. X Savex Cell

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